The Builder.

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New Business Buildings of Chicago.

CHICAGO is the only American city that can claim a distinctive architecture. It is a business architecture, modern in every sense of the word, and the outcome of narrow limitations characteristic of all American cities, but which in Chicago have received fuller, freer, and more satisfactory treatment, both from a constructural and architectural stand point, than elsewhere in America. Chicago architecture, though much talked of, is not appreciated, the public hears more of its height than of any architectural merits it may have, and even the sensible manner in which it meets exacting conditions has scarcely been done justice to.

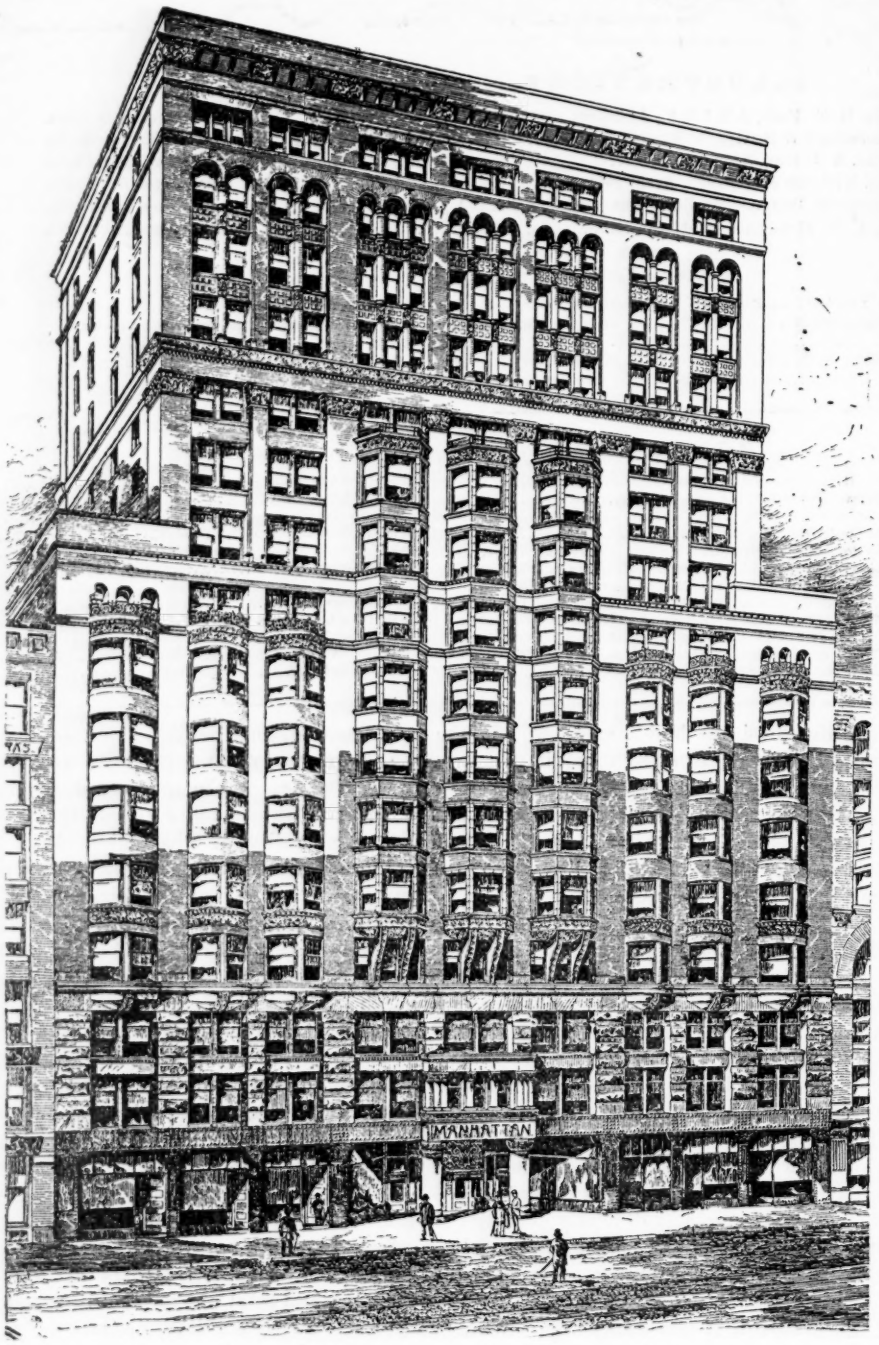
Chicago architecture,—we refer only to the newest office buildings as typical of the most recent advances,—is an attempt to meet the rigid limitations which surround building in that city and which quite preclude the possibility of following established methods of procedure. Hemmed in by the Chicago River and Lake Michigan, the business portion of the city is of unusually small size; the high office building, made successful by the invention of swift-running lifts, solves the question of area by multiplying it indefinitely. Not altogether so, because under ordinary systems of construction the walls of very high structures would be enormously thick, and much valuable space would thus be lost from the renting value of the building. This difficulty is obviated by the introduction of steel construction, skeletons of steel surrounded with a light stone or a brick wall. Thus the Chicago architect had to prepare a building which would have the greatest possible floor space, which could neither extend beyond the building line or recede within it, that must be as high as the funds at hand permitted, and which should be constructed as economically as possible.

The programme was unalterable, and the first step was to discard traditional methods and styles more suited to monumental edifices than the business buildings in which the question of rents is of so much importance. The high building, eight to twelve stories high, is a feature of all American cities, but nowhere have the architects so freely put precedent to one side, and followed the programme so closely as in Chicago.

Chicago has a dozen or more large office buildings either recently completed or in process of construction, and all within a few blocks of each other, averaging sixteen stories in height. The "Manhattan," the "Unity," the "Ashland Block," the "Title and Trust," the "Monadnock and Kearsage," are a few very recent buildings each sixteen stories high. The new Masonic Temple, the lower floors of which are used as offices and shops, has eighteen stories. It is obvious that a flat wall of this altitude, or a wall nearly destitute of the relieving qualities of mass or of grouping, offers a problem of almost unprecedented difficulty for successful treatment. New York, although it has many high buildings, has none as lofty as those of Chicago, yet they are quite high enough to render their general architectural arrangement of basement, superstructure and cornice or attic altogether unpleasing, because these features become unmeaning when spread over too great a space. The Chicago architects have followed a very different course: they have recognised the utter impossibility of "making" façades, and have suppressed all unnecessary ornamentation and architectural features, leaving their buildings simple walls relieved only by windows, or, perhaps, by bow windows.

The "Monadnock," for example, has a series of windows alternating with shallow bow-windows, without ornament of any kind, no strings or piers, or even hoods or sills, to the windows, which are all of one design and almost of one size. The larger front of this building contains 389 window openings approximately of one kind. The main portion of the front of the Masonic Temple contains 300 similar windows, which, like those of the Monadnock, are without any architectural adjuncts. It might readily be supposed from such figures that the high buildings of Chicago are utterly monotonous in design and thoroughly devoid of architectural interest. If architecture be simply an ornamental art of ornamental construction, then perhaps the Chicago buildings may not come within its scope, but if architecture be the meeting of conditions in building in a manner suited to the conditions, regardless of what might have been done under other circumstances, and for other purposes, they are clearly architecture, and very good architecture to boot. They are too high and too big to be designed in the methods employed in small structures, even the great width of many of them,—the Masonic Temple has a frontage of 170 ft., the "Manhattan" 150 ft., the "Title and Trust" 60 ft.,—which gives a much-needed dignity to the immense height, renders it impossible to cut up the fronts in any satisfactory way. They have been left, as it were, in their natural state, frankly expressing the business uses of the building, and the business conditions under which they were built.

The "Monadnock," with its shallow bow windows and total absence of ornament, is a typical Chicago building, because in it the conditions imposed upon architecture in that city are most completely and thoroughly illustrated. The same may be said of the Masonic Temple, for while it has a stone basement, an attic, and a gabled roof, the lines of the superstructure are only slightly accentuated, the series of bow windows extremely shallow, and there are no horizontal lines but those furnished by the frameless windows in the twelve middle stories. The Title and Trust Co.'s building has a basement of four stories, then nine stories of plain windows, six pairs in the centre flanked by slight bow windows; then two stories of similar design separated with string courses but without bow windows, a balcony, another story and an attic of roundheaded windows. The traditionary division of the front is followed after a fashion, though the unornamented superstructure is in the peculiar Chicago manner. In the "Unity Building" the lower two and a half stories form a basement of red granite. The upper part is entirely of buff terra cotta and pressed brick. It consists of two portions, the lower with nine stories and three bow windows, separated by pairs of windows. Above is a deep, horizontal course under three stories without bows, and in which the windows are separated by pilasters which do



The Manhattan Office Building, Chicago.—Mr. W. L. B. Jenney, Architect.

not appear in the lower portion of the façade. Then comes another horizontal band surmounted with a single row of round-headed windows, and above a small attic and cornice. The "Manhattan Building" is even more varied, and the contrast between this front, in which the architect has tried to compose a design, and those in which such efforts have not been made is very striking, and much to the advantage of the latter.

For typical Chicago buildings impress by mass, not by detail. Their finest quality is that of immensity, and the less the fronts are broken up, the less the walls are interrupted by piers or by strings, the more imposing the structure and the more tremendous the effect. Naturally enough, buildings in which such a quality predominates cannot be appreciated from drawings or photographs; they must be seen to gain the full effects of their merits. The Masonic Temple, for instance, is one of the least satisfactory structures in the world on paper; standing before it one is overpowered by its immensity, and its power; the building itself has a real and genuine merit in its mass which renders it as admirable in reality as it is unpleasing in reproduction. The same is true of most of the other new buildings, a quality quite their own and not the least surprising one.

The "Auditorium Building" is very different from any of the structures already noticed. The largest building in Chicago, it ranks as one of the largest buildings of its kind in America, occupying about 1½ acres, and having a total street frontage on three streets of 710 ft. Originally planned as an opera house, the building includes the auditorium or theatre, and recital hall, surrounded by an hotel and office building, the idea being that the income from one part may offset any deficiency in another.

While not designed in what we have termed the typical Chicago manner, the "Auditorium building" impresses by mass, not only because of its size, but because, notwithstanding its utilitarian and business uses, it has a monumental aspect, dependent not only upon the sobriety of the design, but upon the dark grey granite and Bedford stone of which it is built. The three lower stories of rough-faced granite form a basement, in which the windows are restricted sufficiently to give as much wall space as possible. Above, the wall is relieved by an arcade, extending through four stories, of very slightly recessed arches, interrupted only at the corners, where a broad piece of wall gives a much-needed strengthening. Above are a series of round-headed windows in pairs, two stories high, with projecting sills forming a disconnected string course on each front. An attic of wide, square-headed windows, divided by columns, with a string below and a cornice above, crowns the whole. The tower, placed towards one end of the longer side, is, with the exception of the balcony on the lake front, the single marked feature of the exterior, though the vigorously arched entrances and heavy columns of the first story might likewise be considered as ornamental. The necessity of utilising every inch of space has precluded the extension of the tower beyond the wall of the building itself, and its lower part has not therefore that individuality of mass which might reasonably be looked for in a building of this size. The treatment of the tower is the same as that of the main structure to the cornice, which is repeated immediately above the roof line. Three stories of windows are enclosed in a shallow arcade above which is a boldly modelled colonnade with a machicolated cornice as the finish.

Interiorily the "Auditorium" contains some of the finest decorative art in America. The theatre and its approaches, the public parts of the hotel, and the splendid banqueting-hall are superbly and richly decorated,

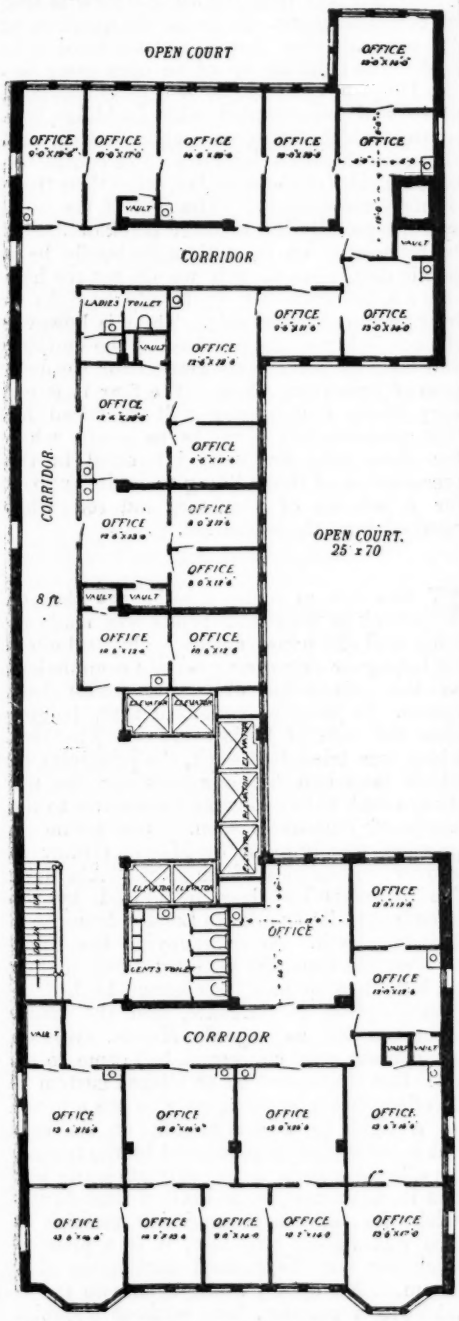
Chicago Title and Trust Company's Building.—Mr. H. I. Cobb, Architect.

and in a manner that helps the architecture without overloading it or becoming intrusive.

If the plan of a building is the basis of which the *façade* is only an expression, it may readily be supposed that the Chicago buildings, which offer so many novelties in design, would exhibit similar originality in planning. This is true to only a limited extent, since the interior of an office building, being put to a number of similar uses, may very properly be much like any other office building. The merits of the plans of the Chicago buildings consist, therefore, more in the ingenuity with which variously-shaped areas are filled than in any especially marked feature. Again, all the newer buildings are erected undivided, so that the floor space may be cut up to suit tenants, and they are thus, in a measure, independent of the arrangements of the architect. The "Manhattan Building" may serve as a type of rectangular structures in which both the longer sides are open to the light, a very unusual arrangement. The plan of the undivided story is simply an immense rectangle enclosing a smaller rectangle, with stairways

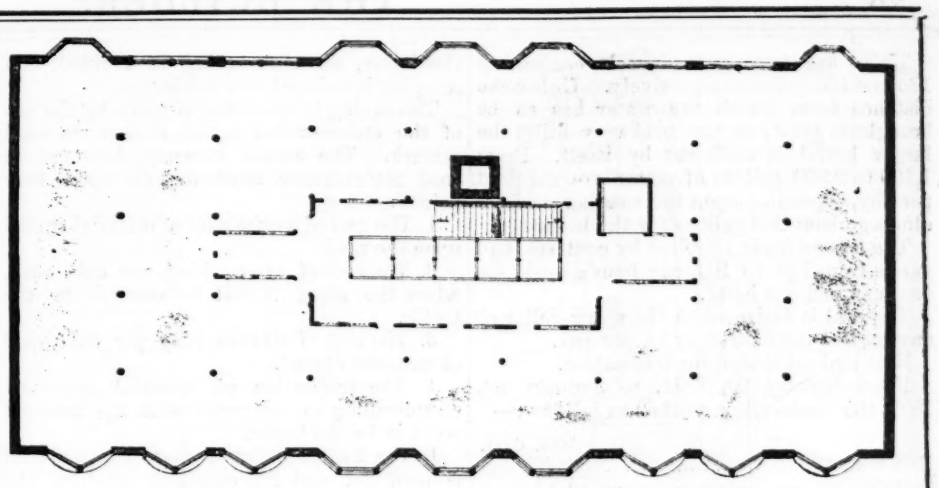
and lifts, and without any dividing walls whatever, the weight of the building being carried by a series of columns and piers distributed at proper intervals.

The Title and Trust Co. building may serve as an illustration of an oblong edifice in which the narrow side only is open to the street. Here a court becomes an integral part of the plan, and is placed at one side and at the centre, while another smaller one gives light to the rear rooms. The offices are arranged in double tiers facing the windows, being intended to be let in pairs or more, each tenant having an inner and outer office. This building is provided with seven lifts. The Masonic Temple is a large rectangular building at the corner of two streets, the two



Title and Trust Company's Building, Chicago. Plan of 5th to 16th floor.

sides opening, the one on to a narrow street, the other on to a court. The size of the building, and the insufficiency of the light to be had from two of the surrounding thoroughfares, renders a large central court necessary. This is covered at the top, and is surrounded with open balconies so far as to the ninth floor, above which the corresponding space is taken by offices, the corridor being placed further in, and having a row of offices on each side, one of which is lighted from the street, the other from the court. Fourteen passenger-lifts and two freight-lifts are needed in this building, and are arranged in a seven-sided figure immediately beyond the court. The ten lower floors of this structure are intended to be used for



Manhattan Office Building, Chicago. Undivided Plan.

shops and stores,—a novel idea which is as yet not in operation. The remainder of the building, except the two topmost floors, are planned for offices, the special arrangement of which depends somewhat upon the requirements of the tenants.

The great office buildings of Chicago are looked upon by their owners simply as sources of revenue, not as architectural monuments. Such, indeed, an office building cannot properly be; but it is to the credit of Chicago architects that they should have produced not only a characteristic group of buildings, but buildings well worth studying as examples of the most modern tendencies in architecture and their expression in architectural form.

Chicago architecture must be estimated by the Chicago standard. Whatever opinion may be held as to the characteristics of Chicago life, its rush and turmoil and business proclivities, it should be remembered that these elements are as much part of the city as a more staid and regular existence is of older communities. These are the conditions that Chicago architecture is concerned with, and if it fulfills them it must be pronounced as successful as other forms of architecture and methods of treatment may be for other communities. One does not find fault with a warehouse because it does not resemble a church; there is nothing in a church that would make its architectural form of any utility or sense in a warehouse. So if Chicago architecture, while differing from that of the other cities, fulfills Chicago requirements and is satisfactory to those who have to use it, it ill becomes visitors to criticise it because it may differ from their preconceived notion of what architecture should be. The buildings may be preposterously high, but they are so from business conditions, not from architectural choice. The Chicago architect does not build high because he likes it, but because the problem presented to him forces him to do so, and his success lies in his frank and business-like treatment of the buildings. Just as a church is the more successful the more completely it answers the requirements of a church, so the success of the Chicago building must be measured by the completeness with which it answers to Chicago requirements. And this position, perhaps fortunately enough, entails no approval of whatever boisterousness may be characteristic of the city.

NEW SCHOOL, COCKINGTON, DEVON.—On the 20th ult. a new school was opened at Cockington, Devonshire. The school, which is of the Gothic style, has been built by Mr. G. K. Smale, of St. Marychurch, from the designs of Messrs. Rowell & Sons, of Newton. The main room, to be used as a mixed school, is 50 ft. 3 in. by 20 ft., and will accommodate 116 children. Connected with this is a class-room affording space for twenty-one children, while in the infant school, which is 56 ft. by 18 ft., there is accommodation for eighty children. The building is of local sandstone, faced with white bricks and Bath stone. The rooms are ventilated with Kite & Co.'s ventilators in the roof, and Lawrence, Thomas, & Co.'s side ventilators. All the rooms are warmed with open fireplaces, and gas for artificial lighting is also provided.

STEAM ROAD-ROLLING.

BY ALLAN GREENWELL, ASSOC. M. INST. C.E.

IN September last (1891) the writer was invited to prepare a report on the cost of steam road-rolling from the experience obtained by its use upon the roads under his charge, for the use of the County Works Committee of the county of Somerset. This report became the basis of a resolution passed by the Somerset County Council at the quarterly meeting held at Wells in October, offering the various contracting highway authorities in the county the sum of 10d. per cubic yard for all stone rolled in by the steam roller, subject to the quality of the stone being approved by the County Surveyor.

The Frome Highway Authority ordered this report to be printed, and it has since been reproduced in many of the leading papers of the day. The kind reception which it has received, and the constant inquiries from members of county councils, surveyors, and others interested in the subject, have led to the belief that a short account of the work done by the steam-roller during one year, giving the actual cost under the various heads, together with such further particulars as would appear necessary for purposes of comparison, would be acceptable to the largely increasing body of those interested in the question of steam-rolling on roads.

The Frome Rural Sanitary and Highway Authority's District, No. 1, is situated in the county of Somerset, and comprises ninety-one miles of district and thirty miles of main road. It contains twelve parishes, with an area of 28,058 acres, and a population of 6,024.

The town of Frome, which is a Local Board District, and manages its own roads, is situated nearly in the middle of the rural district. It has a population of 11,464, and carries on the manufacture of woollen and other cloth. It is, however, principally an agricultural town.

The rural district is almost entirely agricultural, but there is a considerable traffic over the roads due to coal, stone, and heavy timber hauling. The district is very hilly.

The stones used are all quarried in the district, and consist of :—

1. Blue Rock or Mountain Limestone.
2. Dug Flints.
3. Tough blue Sandstone (Lower Oolite).
4. Grey Limestone (Lower Oolite). Very little used.

The steam-roller was purchased by the authority in March, 1888. It was made by Messrs. Aveling & Porter, of Rochester, weighs ten tons, and rolls a width of 6 ft. 3 in.

The staff consists of three men, namely, engine-driver at 3s. 4d. per day, and two sweepers at 2s. 8d. and 2s. 4d. per day respectively, the former acting as steam-roller foreman.

There is a sleeping-van which travels with the roller and contains two berths; the third man being allowed 6d. a night for lodging-money when the roller is more than three miles from Frome.

There are two water-barrels containing 175 and 130 gallons respectively. Unless the distance from which the water has to be brought is great, or the road very hilly, the larger barrel is sufficient by itself. From 1,400 to 2,800 gallons of water are required per day, depending upon the weather, and including about 200 gallons for the boiler.

The horse-hire is supplied by contract, and varies from 7½d. to 10d. per hour's work, for one man and one horse.

The coal is delivered to the steam-roller at any part of the district at 1s. per cwt.

Best lard oil is used for lubrication.

From January 29, 1891, to January 29, 1892, the steam-roller worked as follows:—

	days.	days.
Main roads	127	
District roads	120¾	
County bridges (on district roads)	3¼	
		251
Let out on hire	1	
Cleaning out boiler	20	
Travelling over district	8	
Stopped for repairs	7	
,, by frost or snow	21½	
Holidays	4½	
		62
Total		313

Taking overtime and short days into account, the 251 working days are equal to 265 days of nine hours each.

During this period 160,725 superficial yards of road have been rolled, and 9,141 cubic yards of stone consolidated, made up as follows:—

1. Blue Rock	7,474
2. Sandstone	1,467
3. Flints	200
	9,141

making an average of 606 superficial and 34½ cubic yards per day of nine hours.

The cost was as follows:—

—	Total cost.	Cost per day of 9 hours.	Cost per cubic yard consolidated.
	£ s. d.	£ s. d.	s. d.
Engine-driver's wages ..	53 13 4		1 4
Sweepers' do. ..	66 1 4		1 7
Horse-hire	150 17 3		4 0
Coal and wood	53 13 0		1 4
Brushes, oil, &c.	13 5 1		0 3
	337 10 0	1 5 6	8 8
Estimated allowance for depreciation and repair of steam-roller and 2 water barrels, at 20 per cent. per annum ..	68 0 0	0 5 2	1 8
	405 10 0	1 10 8	10 6

The cost per day of nine hours has, therefore, been 1*l.* 10s. 8d., including everything, and the cost per cubic yard of stone consolidated, 10½d.

By various economical reforms the rate for horse-hire has been reduced from 4½d. per cubic yard at the commencement of the year, to 2½d. at the present time, thus making the total cost about 9d. per cubic yard.

From careful experiments with the blue limestone it has been found that to obtain consolidation with the usual coating of two stones in thickness (each cubic yard broken to 2½ in. gauge, and made to cover about 17 superficial yards of road), the steam-roller must traverse a patch equal to its own width about thirty-five times. From this it appears that a cubic yard of broken stone requires 1½ ton miles of rolling to produce consolidation.

For binding, about 5 per cent. of well-weathered road-scraping is spread over the surface when consolidation is nearly effected. Without the use of binding, consolidation is found to be impossible.

Experience of the roads in the Frome district has shown a considerable saving both in materials and manual labour due to the use of the steam-roller, at least 25 per cent. of the former being saved as compared with stone worked in by the traffic; and, as regards the latter, all after-raking is avoided, and scraping is reduced to a minimum.

The saving to the users of roads by the use of the steam-roller is too obvious to need remark. The actual economy, however, in road maintenance must depend upon four points:—

1. The cost of a cube yard of material spread upon the road.

2. The cost of after-raking, per cube yard, when the stone is left to wear in by the traffic.

3. The cost of steam-rolling per cube yard of material spread.

4. The proportion of material saved by steam-rolling as compared with the material worn in by the traffic.

In the Frome district, where the material is plentiful and of excellent quality, the average cost when spread upon main roads is 5s. 3d. per cube yard. The cost of after-raking may be taken at 2d. The cost of steam-rolling, as already shown, is 9d.; and the writer's experience points to a saving in material by steam-rolling of at least 25 per cent. The actual economy in road maintenance due to the use of steam-rolling is, therefore, nearly 9d. a cube yard.

It will be apparent that the economy will rapidly increase as the value of the material rises.

As it is necessary to keep a very careful watch over the daily work, the steam-roller foreman fills up a printed form on a post-card, which he sends to the surveyor each night, giving the number of superficial yards rolled, the number of cubic yards consolidated, the number of hours at work, and other particulars. These figures, after being checked, together with all items of cost, are entered upon special forms, designed by the writer, and presented to his Board at each monthly meeting.

A. G.

NOTES.

AT the Congress of Chambers of Commerce last week, several of our Colonial visitors bore testimony to the great value of conciliation boards for settling labour disputes. The Premier of New South Wales (Mr. G. R. Dibbs) advised employers to treat the trade unions with perfect frankness, and paid a tribute to the intelligence of the working classes of Australia. The manner in which labour leaders at home have conducted some recent disputes does not say much for their sagacity; but if the experience of the past has the effect of making the workers adopt more rational methods, and choose better men to represent them in their differences with their employers, there will be brighter prospects for the future. Mr. S. B. Boulton, Chairman of the London Conciliation Board, declared that many of the men who had been sent up by the trades unions of London to discuss differences before the Board proved themselves fully capable of dealing with the questions at issue, and conducted their case in an admirable manner; but at the same time he strongly deprecated the interference of professional agitators. We doubt not that by this time many of the members of the unions will be quite ready to echo this sentiment. The result of the discussion at the Congress was the unanimous adoption of a resolution recommending the formation of "properly constituted Boards of Conciliation and Arbitration in all important centres of industry and commerce throughout the empire." The legislature of Belgium has recently been grappling with this question, and has sanctioned the appointment of a Council of Labour, consisting of an equal number of representatives of labour and capital, and of specialists in social questions. We are evidently feeling our way to something of this nature, but we move slowly and cautiously in such matters. The formation of effective Boards of Conciliation would, undoubtedly, do much to prevent the recurrence of the disastrous disputes of the last few years, and also obviate the necessity for an undue amount of State intervention.

WHILE we lament the decision of Mr. Justice Chitty in regard to Emanuel Hospital, it perhaps must be admitted that no other is practically possible. The property from which the endowment of the charity comes has much decreased in value, while the site on which the old building stands has greatly risen in value, and the building itself it is said, needs extensive repair or almost rebuilding to render it habitable. It would seem rather contrary to the objects of a charity that those who administer it should be precluded from raising funds for the purpose by the sale of a building which is not in condition for use, because the building is a picturesque one and interests many persons. So far we cannot but feel that the Judge's view is that of common sense. It is on the question of the open site that there is another word to be said. The building up of an open space like the Hospital quadrangle, in a neighbourhood already so overcrowded with buildings, is a matter which concerns public health, and there are therefore interests to be considered on both sides of the question, other than those of mere æstheticism. The loss of the open space, especially if a monster block of flats is to be erected on it, will undoubtedly be a public detriment, though we do not see how this consideration can be legally brought to bear on the proposed sale. There is however the possibility of the purchase of the building and land by public subscription for the purpose of preserving them. We fear it is not very likely that money will be raised for that purpose, but it might be worth while for those who are most interested in the preservation of the building to invite support for a scheme of purchase, and see what resulted from the invitation.

IT was not so many months ago that an attack in the public prints was made by some land and house agents against solicitors for taking or demanding certain commissions on the transaction of business with land agents. It must be confessed that, judging from the case of Gillow *v.* Lord Aberdare, which was tried last week, the principles on which land and house agents act are not always such as to commend themselves to the minds of reasonable men. The action in question was brought by Messrs. Gillow to recover commission from Lord Aberdare. The plaintiffs had been employed by the defendant to let *or* sell his London house, and they duly let it. After occupying the house for a certain time, the tenant decided to buy it; but when he took it as tenant he had no formal option to purchase, and the transaction, so far as regards Messrs. Gillow's employment was concerned, had come to an end. But they relied on an alleged custom to the effect that a house agent who lets a house has a right to a commission on its sale if it is subsequently purchased by the tenant. The alleged custom is not only obviously bad from its vagueness, for no limit of time during which the right to commission remains in force was stated, but, also, it is a practice which has not the general application of a custom. No doubt, house agents do try to make this a practice, but, without a special contract, it clearly is altogether invalid. Moreover, without such special contract it cannot be justified, because it is, in effect, a demand to be paid though no work has been done. The work done has been the letting of the house, on which commission is duly paid, but the sale is a matter in regard to which the house agent has done nothing to entitle him to remuneration. It need hardly be said that the Judge decided the case in favour of Lord Aberdare; and should the action be taken to the Court of Appeal, there can be no doubt that the result will be the same.

WHY should Friday be consecrated to science? On Friday most of the leading scientific and technical papers appear, on Friday the "echoes of science,"—sometimes strangely distorted,—resound in the *Globe*, and on Friday the Physical Society

holds its meetings. It was therefore appropriate that the Conversazione of the Institution of Electrical Engineers should take place on Friday, July 1. The perfect weather doubtless helped to swell the number of the guests that crowded the spacious rooms of the Royal Institute of Painters in Water Colours, and were received by the President of the Institution and Mrs. Ayrton. Amongst those present were Lord Kelvin (President of the Royal Society), the Hon. Lyulph Stanley, Sir Benjamin Baker, Sir David Salomons, Sir Henry Mance, Sir H. Dalton, Mr. H. W. Christmas (Servian Consul-General), Professor Foster, Professor Crookes and Professor Hughes, Mr. W. J. Hammer (who represented the American Institute of Electrical Engineers), Dr. John Hopkinson, Mr. W. H. Preece, Professor Perry, Professor Forbes, Professor Meldola, Dr. Frankland, Dr. Gladstone, Mr. Diggle, Mr. E. Woods (Past-President of the Institution of Civil Engineers, Mr. J. W. Swan, Dr. Ludwig Mond, Professor Adams, Mr. E. Graves, Mr. Harrison, and Dr. Sumptner. The Band of the Royal Horse Guards performed an excellent programme of music during the evening, under the direction of Mr. Charles Godfrey, and the company did not break up until close on midnight.

WE have received a copy of Mr. T. W. Thompson's report to the Local Government Board on the sanitary circumstances of the Brownhills Urban Sanitary District, consequent upon a representation made last year by the Staffordshire County Council to the Local Government Board, to the effect that the Public Health Acts had not been properly put in force within the district of the Brownhills Local Board. Among the circumstances mentioned in Mr. Thompson's report we find the following:—

"A considerable number of the houses are devoid of eave spouting, and in some cases the surface drainage is deficient or defective, circumstances which conduce to the dampness of dwellings. Many yards are unpaved, and in some cases ashes were found heaped or strewed about them. In others, slop-waters were found lying in pools within short distances of the dwellings.

Where sinks are provided within the houses they usually discharge simply through a hole in the wall—the sink waters running down the outside of the wall to find their way to a channel or gully below. This arrangement obviously keeps the wall in a damp condition, and, in not a few circumstances, the sink-waters were found soaking down towards the foundations of the houses.

Water Supply. — Three hundred and forty-one houses within the district are supplied with water from the mains of the South Staffordshire Waterworks Company; but the remaining villages and houses (some 2,000 of the latter) are dependent upon wells. These wells vary in depth, but taken as a class, they are of very defective construction, and are frequently surrounded by obvious sources of pollution. Internally they are simply dry steined, no attempt having been made to prevent water finding its way into them through the upper layers of the soil. In certain instances liquid, coming from the direction of middens, was observed trickling into the wells. Some of the tenants are aware of the impurity of the water of these wells, and are, in consequence, compelled to send for drinking water to other wells, which in some cases appear little less open to suspicion than those discarded. . . . .

The Brownhills sewage is conveyed to a sewage-farm belonging to the Local Board, the effluent ultimately finding its way into the Clayhanger brook. . . . . At the time of my visit the subsiding tanks, of which there are two, having each a capacity of 9,000 gallons, were practically full of black offensive sludge, over the surface of which sewage was trickling to find its way into the main carrier. Some men, were, however, engaged in attempting to empty the tanks, a process, I was informed, which had not been carried out during the present tenancy. One of the main underground carriers, at the date of my visit, was blocked, and as a consequence the sewage was being turned on to a limited area of a grass field, at which spot the land was apparently sewage-logged.

Of sewage treatment proper there appeared no sign.

The privy midden is in general use. The middens are of excessive size, sunk, often deeply, below the ground level, and many of them are uncovered. They are mostly found in a wet and offensive condition. . . . . Until November of last year the scavenging of middens was left entirely to the householders. In that month, however, as a consequence apparently of the remonstrances which had at different times been addressed to them by the Board, and of the visits of the Medical Officer to the County Council, the sanitary authority entered into contracts with four separate contractors for the scavenging of the four different wards in the district. The contracts, which were made for the period of one year, require the contractors to remove all night-soil and ashpit and house refuse in accordance with the provisions of the by-laws. The contracts have certainly not been acted up to in this respect, for the by-laws require the cleansing of every ashpit and every privy "at least once in every week." So far from this having been achieved, large accumulations of ashes were in some instances found, which had never yet been visited by the scavenger, and many middens, although said to have been emptied once or more under contract, were quite full at the time of my visit. The scavenging of the district must, therefore, still be regarded as unsatisfactory. . . . .

The bye-laws themselves are similar to those of the Model Series issued by the Board. But in several important respects they have not been enforced. This is notably the case with regard to the construction of new privies, ashpits, and cesspools. Such ashpits as were visited which had been recently constructed in connexion with new houses, were found mostly of excessive size, not rendered inside with cement, or asphalted, nor were the floors raised three inches above the level of the surrounding ground, as required by clause 34 of the by-laws.

Defects of a similar character to those above mentioned were found as regards new ashpits and cesspools elsewhere, and seemingly no attempt had been made to enforce the by-laws in these important particulars.

As a result of my inspection, the conclusion seems unavoidable that, with respect to the provision of sufficient sewers for their district, the provision of wholesome water supplies, and the enforcement of by-laws, the Brownhills Urban Sanitary Authority have failed in the discharge of the duties imposed upon them by the Public Health Act, 1875."

IN his report on the Sanitary Condition of Kensington for the four weeks from May 22 to June 18, Dr. Orme Dudfield again comments strongly on the anomaly by which the Water Companies have power to cut off water and thereby create a "nuisance" to be dealt with summarily, while the Sanitary Authority is bound to issue a notice for the abatement of the nuisance, and thus becomes, in fact, the agent of the Water Company to secure payment. The position thus created is, as Dr. Dudfield says, both ridiculous and undignified. The Water Companies ought to be given other powers for recovering their rates, and the power to cut off water removed.

AMONG the vases,—a small but very valuable collection,—recently acquired for the British Museum, there is one, a white Athenian cylix by Sotades, which from its rare subject calls for special attention. On it is represented the myth of the imprisonment of the Seer Polyeidos in the tomb of Glaukos, son of Minos. So far as we know there is only one other supposed instance of this curious and obscure bit of mythology, and that is on a lekythos also of the white Athenian kind, quite recently published in the *Jahrbuch* of the German Archæological Institute. In that case the representation consists of a large white tomb-mound, from which branch out coventionalised trees. Two huge snakes dart from the tomb apparently to attack an approaching male figure who is supposed to be Polyeidos. Perched on a branch across the tomb-mound is a small owl done in purple. It was an owl which, according to Hyginus, discovered to Polyeidos the burial-place of Glaukos (*vidit noctuam super cellam vinariam sedentem*). The story of Glaucus and Polyeidos is but little known, and the acquisition of this cylix by the museum will, we fancy, send many people seeking to their mythological dictionaries. We may note as a point of interest that these two vases in which alone the myth occurs both belong to a distinctively Athenian class of work. As to the rest of the collection, there is a second Sotades cylix, in which a maiden is represented plucking fruit from a tree; on a third cylix, so similar in style that, presumably, it is from the same hand, a man armed with a club confronts a huge serpent. Now that these three white cylikes are added to its collection, a collection which included, be it remembered, the Pandora vase and the Aphrodite on the swan, the British Museum stands, for this department, easily first among the museums of Europe. Three red-figured cylikes deserve mention; one signed by Hermaios, the other two respectively in the styles of Euphronios and Chachrylion.

THE Society for Preserving the Memorials of the Dead have, as we understand, undertaken to repair the Belasyse monument, against the east wall of St. Giles's-in-the-Fields Church. It commemorates the Royalist John, son of Thomas, first Viscount Fauconberg, created Baron Belasyse, of Worlaby, county Lincoln, on January 27, 1644, his three wives, and several of his children. A long inscription, much worn, recounts his services to Kings Charles I., Charles II., and James II. His third wife, Lady Anne Paulet, was daughter to John, fifth Marquis of Winchester, who so long defended Basing House in the Civil War. Lord Belasyse died on September 10, 1689; his second wife was buried, in 1662, beneath the altar-table in the former church, and re-interred, in the new churchyard, in a vault under the north gate.* In No. 1369 of the *London Evening Post*, for August 24-6, 1736, we read:—

"Last Week was finished a very lofty and costly Monument of most curious Workmanship, and affixed to the East Wall of the Church, in the Church-yard of St. Giles's-in-the-Fields, Middlesex, on part of which being of White Marble, in black Letters, under a Coat of Arms, impaled, of Belasyse and Powlet, is the following Inscription . . . . . .

A drawing of this, which was set up by Lord Belasyse's two surviving daughters; with a copy of the inscription saying it was erected in 1736, is contained in the *Gentleman's Magazine* for August, 1817. The shield (its charge, and the coronet above, almost effaced) is carried on a high wall-slab, in front of which is a sarcophagus supported by two feet upon a high base, and finished at the top with a pediment. Now it is worthy of notice that Hatton, in his "New View of London" (1708), describes a monument as then within the chancel of old St. Giles's (built 1623, and pulled down 1730) thus:—

...a black and white Marble Monument, with Columns and Entablature, of the Ionick Order. And these Arms: A Chevron betn 3 Flowers de lis, with a Crescent for a difference [Belasyse] Impaled with 3 Swords in pile [Paulet]. Also these Arms [since removed]: A Fess betn 3 Cross Crosslets. And this Inscription. This Monument was erected, Anno 1670 [sic], in memory of the Honourable John, Lord Belasyse, Baron Worlaby, second Son of Thomas Lord Viscount Fauconberg, his Wives and Children. . . . .

Hatton gives, but not quite accurately, all the inscription; Maitland, 1757, faithfully copies Hatton. John Parton's book, 1822, upon the hospital and parish of St. Giles, rehearses Hatton's words, adding, in a note, "this monument is still remaining, and is on the outside of the church, against the east wall of the chancel." Parton cites "1670" as the date of Lord Belasyse's interment; and does not point out that the memorial we refer to differs from that described by Hatton, save as to its upper shield and lettering. And whilst we do not find in some of the later books upon London any mention of a Belasyse monument here, the earlier chroniclers say nothing to indicate—except by the comparison we make above—that, as seems to be the case, a former memorial was altered to, or replaced by, the one of 1736.

A SMALL exhibition of wood-carving is now being held at 33, Brewer-street, W., and consists of the work done by the pupils of the Donegal School of Wood-carving, which was first started in 1888 in Gweedore, under the direction chiefly of Mrs. Ernest Hart. There are several excellent specimens

* In 1673 he lived in Charles-street, St. James's-square. His nephew, Thomas, second Lord Fauconberg, married Cromwell's daughter, Mary; they lived in Soho-square. See our "Note" of May 16, 1891.

of work, — some panels, a cabinet, and smaller objects, such as bellows, boxes, &c., the carving being conventional, and taken largely from Renaissance models. Some few things have more of the Irish character in their detail, and doubtless when the school has been in existence some little time longer more attempt will be made towards originality of design. Meanwhile, the object is a praiseworthy one, and deserves support, as supplying an employment for a large population in the congested districts of Donegal during the winter months.

THE advertisement for a new chapel for Gray's Inn, which appears in our advertising columns this week, adds another to the collection of amusing documents of this kind which might be made. Architects are invited to send in plans to $\frac{1}{8}$-in. scale—a very large scale for competition drawings, putting unnecessary extra labour on the competitors; no payment or premium of any kind will be made save in respect of the design which shall be accepted, and apparently the promoters of the competition do not bind themselves to accept any design, though they do not seem to know how to express this, as they put it in these words—"who will not be bound to accept the lowest or any estimate;" apparently confounding an architectural competition with the sending in of tenders by contractors, and applying to the former the safe-guarding phrase generally used in the latter case! Of course if people send in competition advertisements of this absurd kind, the publisher of this journal has no choice but to accept the order as sent; but we would really suggest to some of those who are about to advertise competitions that they might find it worth while, before sending their order to the publisher of the *Builder*, to consult the editor as to the form of their advertisement. Some at all events of those who have competitions to advertise might in that case have saved themselves from appearing ridiculous in print, and from wasting their money in advertising competitions on terms which no high-class architect would look at.

LETTER FROM PARIS.

THE Salon des Champs Elysées has closed its doors and the formal distribution of prizes has served as occasion for many conciliatory speeches; M. Bonnat in the first instance and after him the Minister of Fine Arts, made eloquent appeals in favour of artistic brotherhood, and similar sentiments were expressed at the annual banquet the same evening, and the guests separated full of agreeable illusions which are not very likely to be fulfilled. There is in fact a great gulf between the two camps, and the new Salon, in suppressing awards, which prove very little and often cause discontent, has collected around it many artists, injustice to whom seemed to have become almost a principle of action. On the other hand there is reason in the poet's line—

"Tel brille au second rang qui s'eclipse au premier";

and many painters and sculptors have gained by the schism an official position which they could not otherwise have commanded. To bring about the union talked of would need a thorough revision of the procedure of the old Salon, and a great deal of giving way on the part of stiff-necked members of the Institut; and on the whole it seems probable that M. Bonnat and M. Puvis de Chavannes will reign over their respective territories for another year at all events.

The date for the next Universal Exhibition is already being canvassed among our political leaders. Every one seems agreed that it should coincide with the opening of the new century, and should be held in May, 1900. A decree to this effect has just been submitted to the Chamber of Deputies, which will shortly take it into formal consideration. To those who think the action premature it is replied that the decree for the 1889 exhibition was passed in 1884, and that the time between now and 1900 is not too large for the preparation that will be required, especially if it is decided to abandon the Champ de Mars for some other site.

An interesting exhibition was held last month at the Georges Petit Gallery under the title "Cent Chefs-d'Œuvres," the receipts to be devoted to the erection of ateliers for women. There were in reality about 150 pictures of the French, English, Belgian, and Dutch schools. Among the French artists represented were Watteau, Corot, Meissonier, Daubigny, Millet, Troyon, Dupré, Courbet, and Manet. The English pictures formed a very interesting collection, and served to show how much some of our painters, as Dupré and Rousseau, owe to the study of Constable and Bonington.

The École des Beaux-Arts has just exhibited the "envois de Rome," whereof the architectural drawings only are of much interest. In painting, the "Christ" of M. Danger, a fourth-year pupil, would pass unnoticed in any average exhibition, and in sculpture M. Boutry's "Le Paix" is but a commonplace composition. But among the architectural groups we find things really worth attention. We may especially note the restoration of the Temple at Epidaurus, by M. Defrasse, a fourth-year pupil, which is a most remarkable work and full of learned detail. M. Tournaire's study of the Temple of Juno at Agrigentum is also worth notice, and his restoration of the *sgraffiti* from one of the Florentine palaces. M. Sortais has sent drawings of the Thermæ of Agrippa, and M. Pontremoli drawings of the Forum of Nerva. The one criticism to be made is that all these are purely academic drawings showing only correctness, knowledge, and labour, but no original conception.

As has been mentioned, Madame Léon Bertaux, founder and president of the "Union des Femmes Peintres et Sculpteurs," is a candidate for the chair in the Académie des Beaux-Arts left vacant by the death of Bonassieux. It is understood that the Academicians intend to dispute every attempt to break through the rule against the entry of women into their ranks; the candidature of Madame Bertaux, however, is not in one sense without precedent, as several women were accepted as members of the "Académie Royale de Peinture et de Sculpture" in past days. The first was Catherine Duchemin, wife of Girardon the sculptor, and the last Madame Vigée-Lebrun. In 1793, the "Académie Royale" was suppressed, and at the formation of the Institut women were formally excluded.

At the Hôtel de Ville the placing of the decorative paintings in their positions is going on; in a few days M. Benjamin Constant's ceiling will be *marouflé*, and those of MM. Morot and Gabriel Ferrier, and the "Hiver" of M. Puvis de Chavannes. The "Galerie des Paysages" is nearly completed, and M. Barrias has just finished his cupolas. M. Binet is at the present moment occupied in painting, also for the Hôtel de Ville, an immense composition illustrating the voluntary enlistment during the siege of Paris in 1870, on the Place du Panthéon.

The visits made by the members of the Congress of Architects last month were the occasion of drawing special attention to some buildings of considerable interest, and we cannot do better than devote the remainder of this letter to some notes of these visits and the buildings which formed the object of them.

The first visit made was on Monday the 20th, to the Musée Galliera. In 1878 Mdme. Marie de Brignole, widow of Raphael de Ferrari, duc de Galliera, presented to the City of Paris the 9,800 mètres of ground on which M. Ginain has built this museum, which surrounds a beautiful square, full of flowers and verdure and ornamented with a fountain. The generous donor has added to this gift a sum of 6,500,000 francs, of which 4,560,000 have already been swallowed up by the buildings. The works, begun in 1879, and delayed owing to the necessity of having to make elaborate and careful foundations in the old quarries of Chaillot, will soon be finished. The Municipal Council intend to turn it into a thoroughly modern museum, something in the style of that at the Luxembourg, and to collect there the principal works in painting and sculpture obtained from the two Salons. In spite of the indifference of the public to architectural designs, there will perhaps be some interest aroused in the models in relief, and the frame work designs which formed a feature in the exhibitions of the City of Paris in 1878 and 1889. The Musée Galliera is a pretty "bonbonnière," designed in an entirely Greek style, by an architect who thoroughly understands his work. It is entered by a semicircular court, the porticoes of which communicate with the colonnades opening on to the gardens on each side of the central pavilion. This pavilion has been decorated by MM. Chapu, Thomas, and Cavelier, with symbolical statues of painting, sculpture, and architecture. In the vestibule the bust of the founder will be placed; then there is a Salle de Peinture, lighted from above, and flanked by smaller rooms, which leads to a sculpture gallery, well lighted by three large bay windows looking on to the Square. The *façade* of the building is 74 mètres long. There is a small library, several other rooms, and some large shops on the ground floor.

The Congress then proceeded to the Trocadéro Palace, where, instead of going to the Sculpture Museum, they were detained in the Salle des Fêtes by the interesting description given by M. Bourdais, who is a distinguished engineer and architect. He explained the construction of this great hall, which has a height of 35 mètres and a width of 50. He announced, to the surprise of every one, that the stage, which measures 30 mètres at the opening, is exactly double the size of that at the Opera. He also tried to justify the acoustic properties, which have been found notoriously defective, by affirming that the most delicate tones of the violins in the "Minuet de Boccherini" were heard in every part. Without following M. Bourdais in his scientific dissertations, we may mention here the regrettable oversight with regard to M. Davioud, who was collaborator with M. Bourdais, and whose name (unless we are mistaken) was never mentioned. We will, however, now pass on to the Musée de Sculpture Comparée, which extends the whole length of the gallery on the right of the Palace. M. Geoffroy de Chaume has collected here with much taste, the finest specimens of the Roman epoch, of Flamboyant architecture, and of the style of the seventeenth century. To the contents of this gallery a long article was devoted in the *Builder* of August 10, 1889.

The next day, at the same time, the Congress assembled at the other end of Paris, in the "Bourse du Travail," which has recently been inaugurated under the name of the "Carmagnole," and which is the last socialistic concession made by the municipality to the working syndicates of Paris. It is the popular tribunal, open to the everlasting claims against the "Infamous Capital." It is also the spot from whence the middle-man is to be evicted, and in a word it is to supersede the "Bureaux de Placement." In confiding this building to M. Bouvard, the Municipal Council made a happy choice, for few architects possess in a similiar degree the qualities of administration and organisation necessary for the accomplishment of such a work. The spot chosen was at one time occupied by a panorama, near the Place de la République, in a popular quarter, and two steps from Belleville, which has been called the "Mont Aventin de la Révolution." It was necessary for the purpose to have a large building, solid, cheap, well designed and ventilated, and of a simple and severe style. All this has been very well carried out by M. Bouvard. On the ground floor is a hall for the engaging of the workmen; above is a large hall for public meetings, with oak panelling, on which the arms of the old corporations are carved. In the semicircle occupied by the Tribune are painted the principal Parisian trades. All this decoration is unpretending, and in good taste; the artist is M. Delmotte. Ventilation is effected by inlets under the benches, and heated air is admitted. The whole building is lighted by electricity. On the first stage are all the numerous offices for the working syndicates, who have also a general hall and a library. All these rooms are well-lighted and furnished in a simple and comfortable style, which does credit to M. Bouvard's taste, and which met with the approval of the Congress. The visit to the Conservatoire des Arts et Métiers was next made under the direction of M. Ancelet, to whom the Government has confided the erection of the new galleries at the extreme end of the garden, which itself will be converted into a great hall to receive the machines which are actually on view in the old Church of St. Martin des Champs. These galleries were begun in 1886, and then left for some time. The cost has already mounted up to 500,000 fr. Early on Thursday morning the Congress started for Châlons, where they were met by the Architectural Society of the Marne, and conducted by M. Génuys, diocesan architect, to the Cathedral of St. Etienne. It dates from the end of the

Accepted Design for Cemetery Chapel, Ripon.—Messrs. Clark & Hutchinson, Architects.

thirteenth century, and possesses a very beautiful nave. The choir is surrounded by apsidal chapels, which from the outside give a very beautiful effect. We noticed a bas-relief of the sixteenth century, and several tombstones of the fourteenth century, and an altar made in 1686 from the designs of Mansart. The Congress lunched in a picturesque restaurant having the quaint name of "Hôtel Haute Mère-Dieu."

After a visit to the church of St. Alpin, decorated with stained glass of the Renaissance period, and with a painting on a gold background assigned to Van Eyck, the Congress proceeded to the church of Notre Dame de l'Epine, at some distance, and which was really the principal object of the excursion. This is a fine specimen of the Florid Gothic of the second half of the fifteenth century; it includes a long nave and side-aisles with large windows, a choir surrounded by a cloister, and a Renaissance organ-case. The church, which almost rises out of the fields, has two large towers, one 46 mètres high. Châlons has several other curious monuments, and these occupied the remainder of the day, — the churches of Notre Dame, a very complete specimen of the Roman style, St. Loup and St. Jean, the Palais de Justice (M. Collin, architect), the Seminary, the walls of which date from the time of Louis XIII., and finally the old residence of the Governors of Champagne, which dates from the eighteenth century, and is one of the most beautiful Hôtels de Préfecture in France. It is a very large building, and contains nine fine *salons en suite*, opening on to a beautiful walk called the "Jard," in which the walks are almost lost to view as they disappear under the old trees. We may mention the Hôtel de Ville, which also dates from the eighteenth century, and not far from it is the Museum. The last day of the Congress was given up to a visit to the new buildings of the Court of Appeal. M. Daumet was the guide, and showed first the civil Tribunal room, which is installed in the "Grand Chambre" of the Parliament, executed and ornamented under Louis XII. by Fra Giovanni Giocondo, and of which the fine ceiling has been entirely preserved. The "prétoire" is decorated with a fine tryptych representing the Christ accompanied by symbolical figures, an exquisite work of Elie Delaunay's, framed in a wooden setting of which all the details were designed by M. Duc. This was the last effort of the great architect, who never lived to see the accomplishment of his work. All this time M. Daumet never ceased to give all respect and praise to his predecessor's taste and talent, whose work has remained one of the most beautiful monuments of the century.

The first room of the Court of Appeal is the personal design of M. Daumet. The ceiling of natural pine is decorated with panels with cornucopias and other devices carved in the wood and painted by M. Guiffard. In the centre a space is reserved for a composition by M. Bonnat. The walls are hung with a light blue stuff, ornamented with arabesque, and bordered with Aubusson tapestry. The sculptured ornaments are by M. Flandrin, and above the "prétoire" is the celebrated picture of which the *Builder* has already spoken, and which is one of the gems of the Palais de Justice. This picture, painted about 1452 to 1455, was in the "Grand Chambre du Parlement," and it has been attributed both to Van Eyck and to Albert Dürer. The details and some of the execution, however, seem to point to its having been painted by a French artist. The doors of the prétoire are surmounted by bas-relief in wood, gilded and decorated with the Royal Arms. These have been for some time hidden, and the architect bringing them to light urged their being used in spite of their Monarchical character. After passing through a "Salle de Conference," and the office of the President, the second room of the Court of Appeal was reached, and from there the Congress was conducted into the new "Grand Chambre," which was inaugurated on April 6. It was commenced by M. Duc, and was the last work of M. Coquart. Perhaps rather too rich and heavy in its magnificence, still this great room forms a fitting setting for the supreme tribunal of France. At the end is a Christ of M. Henner's. The ceiling is ornamented with a great composition of M. Baudry's, "The Glorification of the Law." Some very original ornamentations fill in the windows of the great bays which light the room, the carving being done by M. Cugnot, and the painting of the ornaments by M. Chauvin. This is the work to which M. Coquart has joined his name, and which ended the series of Congress visits.

CEMETERY CHAPEL, RIPON.

THE illustration shows the design for the proposed new cemetery chapel for the Corporation of Ripon, which was selected in competition. Messrs. Clark & Hutchinson are the architects.

THE ROYAL COMMISSION ON METROPOLITAN WATER SUPPLY.*

WE continue Mr. Ashby's statement as to the pollution of the Thames between the intakes of the water companies and Oxford:—

The Colne.—The population of the valley increased about 31 per cent. during the thirty years 1861 to 1891, and will probably have increased about 46 per cent. during the forty years ending in 1901. That the Colne and its branches receive much sewage and other pollution will be apparent from a perusal of the details. This river and the Grand Junction Canal above Cowley are intimately connected,—in fact, they form one stream, since much of the canal water flowing southwards between the summit near Tring and Cowley Lock, below Uxbridge, is discharged into the river, some by means of overflows, the rest at Cowley Lock, which empties into it. It is true that some of the Colne water is conveyed into the Thames below the intakes of the London water companies through the artificial cuts known as the Duke's and King's rivers, but a very large proportion of it reaches the Thames above the intakes by its branches which pass on to the Hythe end at Wraysbury and to Staines; the latter branch, as previously described, contributing two small streams which receive further pollution, and join nearer the water intakes. There is a large floating population on the canal which may add greatly to the

* See last volume of the *Builder*, pp. 418, 435, 456, 480, 503; and current volume, p. 10.

pollution of its water, whilst the bilge-water of canal boats carrying offensive cargoes must necessarily be pumped into it. Enormous quantities of ashpit and other filthy refuse are barged from London, chiefly from Paddington, and are deposited along the Slough branch of the canal, whereby festering heaps of a most highly-offensive nature are accumulated on its banks, and, in some instances, close to the Colne. At the public wharf on the Slough branch of the Grand Junction Canal at Langley Marsh, there were the remains of a large deposit of house refuse. Passing eastwards along that canal branch, I observed some leakage from it into a small branch of the Colne, which it crosses; and in that stream there was much foul deposit. At the next public wharf on the north side there was an immense deposit of strong manure and ashpit refuse right on the edge of the canal, and draining into it. Further on there was a large deposit of manure immediately over a land drain which was running into the canal, just opposite, on the south side. Much manure had evidently been recently deposited. On the north side there was another large lot of town refuse falling into the canal. At a brickfield on the same side there was a landing-place for ashes overhanging the water. I then saw a barge of ashes being unloaded, and also at another brickfield there was a large canal boat, with open sideboards, piled up with house refuse, being unloaded on to the bank. On the south side, a large heap of manure was draining into the canal. On the same side, beyond the iron bridge crossing to Iver, there was a high heap of house refuse on the bank, and close to the edge of the western division of the Colne, into which it fell and drained. It was about 45 yards long, 7 yards wide, and 5 yards high. The stench emitted from it was unbearable. Near to it there was a large heap of old tins, thirty-eight or forty loads or more, showing that the place is much used for a refuse tip. Here there were human excreta lying close to the edge of the Colne, that evidently being a place much resorted to. There was some leakage into the Colne from the iron trough, which carries the canal across the river; and much mud was deposited on the bed of the latter. About 50 yards further on, and on the north side of the canal, was an enormous tip of putrid refuse, about 170 yards long, 10 yards wide, and 5 yards high; refuse being level with and strewn about close to the water-edge. Although on the other side of the canal, I was forced to run past this mass of putridity, as the stench arising from it was overcoming. A stream coming from the direction of Iver skirted the east end of the base of this filthy heap, joining the next division of the Colne about 150 yards further to the east. The refuse was falling and draining into this stream, and made it in a very foul condition. In the Colne at that part there was much mud, and there was some oozing into it from the iron trough carrying the canal over it, as well as some direct leakage from the canal into it. Here also human excreta were deposited close to the water-edge. There was very considerable leakage into the next division of the Colne from the canal, where it is carried across it by a bridge. On the public wharf by the iron bridge crossing the canal and leading towards Uxbridge, there was another large tip of house-refuse falling into the water. Near Fray's river I saw two heaps of foul matter, said to consist of street-gully and sewer-cleansings, &c., which had been brought from Paddington, and I saw a canal-boat full of this filth being unloaded there. Some of the low-lying land immediately adjacent to the several divisions of the Colne is manured with these foul matters. The water in this branch of the canal is almost stagnant, and along it there was abundant evidence of the contamination it is constantly receiving from foul cargoes and refuse heaps. I also observed several dead animals floating in it.

I have dwelt thus fully upon what I observed at this part, because the matter assumes importance when we consider that there is constantly some leakage of the impure canal water into the Colne, and that at times this assumes considerable dimensions.

Uxbridge is sewered, and the sewage, after being very imperfectly treated with chemicals, is discharged into the eastern division of the Colne, a little above the Slough canal. The sewage is delivered under water; it made the river very turbid, and I found it highly offensive, even after mixture with the river water. In Uxbridge I found a little slop and privy pollution going directly into the river, and also much pollution from a fellmonger's yard. There is a pollution at the following places on the Misbourne:—At Chalfont St. Peter's I found much slop pollution and a great deal of blood discharged into the stream opposite a butcher's shop. At Chalfont St. Giles there is a good deal of slop pollution. At Amersham the pollution is very gross. I found the bed of the river in the filthiest state, there being an enormous deposit of sewage matter upon it. This disgraceful state of things is caused by the discharge of street sewers, house drains, and privies into the river. I counted about forty of the latter discharging directly into it. A brewery drains into it, and I observed some pigsties similarly circumstanced. There are also several drinking-places which afford opportunity for pollution from cattle, of which I saw not less than seventy-five head grazing on land adjoining the river. At Rickmansworth, on the Colne, there is much pollution. Many privies are built on the edge of the river, as though they previously discharged into it; but I could not see any doing so now, those I entered appearing to have fixed receptacles fitted to them; they are, however, in close proximity to the streams. I observed many sewers and drains discharging much slop pollution into the river and canal. I also saw some cattle and brewery pollution, and a tannery appeared to drain into the stream. Below a large mill, formerly used as a paper-mill, but now as a print mill, the Colne water was very turbid, and its surface was covered with white foam. I found much pollution of the river Gade at Hemel Hempstead, where I observed sewers discharging filth into it; there was a large deposit of sewage matter on the bed of the stream. The sewage from the higher part of the place passes through a covered tank, which has an overflow into a ditch passing under the canal to join the river below the paper-mill at Two Waters. This ditch was in a foul condition; it appeared also to receive drainage from a tannery. At Berkhamstead, on the Bulbourne, there is excessive pollution, but I understand that steps are being taken to lessen it. Here I observed house drains and privies discharging freely into the river, which at its junction with the Grand Junction Canal was in a filthy condition, its water being black and stinking, and below that spot it receives still further pollution. Below the junction of this stream the character of the canal water was entirely changed; higher up it was muddy and yellow, but there it was most filthy, black and opaque; gas was bubbling up freely from it, human fæces floating on its surface, and passing barges stirring up black sludge in it. I saw a sewer and privy discharging into the canal. Watford, on the Colne, is sewered. This place contributes much pollution to the river. The sewage, after some precipitation, is passed on to under-drained land. By the sewage-farm I found much filth in a ditch into which three storm-water overflows discharge. The Wye or Loud-water River rises a little above West Wycombe. It passes nine flour mills, fifteen paper mills, one fellmonger's yard, and one brewery, exclusive of any of the latter at High Wycombe. The manufacture of paper is largely carried on in this valley, and in the neighbourhood of the numerous mills houses are freely scattered along its sides. The river in its course receives a little slop pollution, some cattle pollution, the effluent from a sewerage-farm at High Wycombe, pollution from a fellmonger's yard, drainage from a brewery, and much manufacturing pollution from the numerous paper-mills, from several of which I saw foul liquid discharging into it; the final result being that, on reaching the Thames at Bourne End, it was in a very foul state.

The Thame.—This stream and its tributaries may be described as much polluted. On the Thame I found much polution at Dorchester (as already explained). At Drayton there was much slop pollution. Wheatley, a Local Board district, is a large, compactly-built village, consisting mainly of two parallel streets. There are road sewers, into which house-slops are drained. A covered brook, in which there are several sewer ventilators, flows through the lower street, and discharges into a running ditch, which I found very foul from sewage deposit. Thame, with a population of 3,306 in 1891, contributes much pollution. There are several outfalls; at one I found a filthy sewage deposit, close to the Cuttle Brook. Slops are discharged into pitched gutters, some of which end in street sewers. At Cuddington I found much filthy deposit in a ditch, delivering into the Dad Brook below two large houses and a farm-yard. In the main part of the village there are road-sewers into which slops are thrown. They deliver into a running ditch which joins the Thame. On the Aylesbury branch there was much pollution at Aylesbury, which contained 8,674 inhabitants at the census of 1891. This place is sewered, the sewage being treated with chemicals. I found the sewage effluent as it was discharged into the stream, turbid, discoloured, and highly offensive. I also observed six drains discharging slop-pollution directly into the stream.

The Ock.—Rising not far from Uffington, joining the Thames at Abingdon, I found much pollution of this river and its branches. Wantage, with a population of 3,669 in 1891, contributes much sewage pollution. I observed several sewers discharging into the stream, so much so that it was in a very foul state even as far as Grove, about two miles lower down.

Sutton Courtney Mill Brook.—At East Hendred there was much sewage pollution. I found a sanitary pipe-sewer ending in a ditch in which there was an enormous deposit of highly-offensive filth. The village school also drains into that ditch. At the ford below Ardington there is a sheep-washing place, just below which I observed a sanitary pipe-sewer discharging offensive fluid into the stream, in which there was much foul deposit. Blood issues from this sewer at times.

The Moor Ditch.—This small stream is much polluted, firstly at Long Wittenham, then at Didcot and Didcot New Town, where I found filthy deposits from sewer outfalls in ditches joining the branch from that place, and lastly at Harwell, where I found the stream very dirty from slop and cattle pollution.

The Kennet.—The effluent from Reading Sewage Farm enters the Kennet before it joins the Thames. There is a separate system of surface-water sewers in that town, and it is impossible to prevent a certain amount of slop pollution through them. Newbury is partly sewered, and partly drained into non-water-tight cesspools, which are affected by the water level, water standing in them to within a very few feet of the surface. Sewage is discharged into the canal by various outfalls, whilst a fellmonger's-yard, numerous house-drains, soil-pipes, and privies also discharge into it, a public privy and urinal belonging to the Corporation being amongst the number. Probably not less than half the water-closet sewage and two-thirds of the slop-drainage reaches the canal, which was in a filthy state. I found the river at Marlborough in a very filthy state from sewage pollution, there being a large deposit of sewage in it. With the exception of some earth-closets in a few houses, the whole of the sewage is discharged into it by various outfalls which I saw. Marlborough College, with its laundry for about 600 boys, besides masters and servants, is drained into it. I also observed drainage from a tannery, and a little cattle pollution.

The Loddon, Whitewater, and Blackwater.—Sewage is treated at Wokingham, Wellington College, Royal Military and Staff Colleges, Broadmoor Lunatic Asylum, York Town and Camberley, Aldershot Camps and Barracks, Aldershot Town, and Basingstoke. There is considerable pollution of the Blackwater at several places. There are arrangements for treating the sewage from Wellington College by chemicals and on under-drained land. At the time of my visit, I think it was being put directly on to the land, and there was much pollution of a stream running into the Blackwater, and the stream contained much sewage fungus. I believe, however, that improved works are being carried out there. The sewage from Broadmoor Criminal Lunatic Asylum, where there are some 700 persons, is treated on land. I did not observe any under-drains, but saw some natural drainage from the irrigated land, apparently in good condition, which is discharged into a stream joining the river. Here there are about forty cottages, and near some of them there was a drain-pipe delivering much foul sludge into a ditch which joins the commencement of the above-named streamlet. Sewage from Sandhurst Royal Military College and from the Royal Staff College is treated on land past which a running ditch flows into the river. I found a large deposit of offensive black sludge in this ditch. I also observed foul sludge in a cutting through an osier bed which appeared calculated to take sewage, as

also on the bed of the river, where it is joined by this. York Town and Camberley are sewered. The sewage from the higher parts passes through a small intercepting tank, and from the lower parts it goes through another. It is then all treated on some under-drained land, the effluent being discharged into a stream which flows into the river. I saw sewage running off the surface of the land into the stream. There are road sewers at Farnborough-street, and I saw an outfall sewer discharging into a ditch full of foul sludge, which joins the Blackwater a short distance off. The sewage of the North and South Camps and Barracks at Aldershot is treated on a farm at "Aldershot Stubbs." The greater portion of the land is under-drained. The lower part of it abutting on the Blackwater is very swampy. There are various channels which contained much sludge by which effluent from the surface flows into the river, in which there was also deposit of sludge. A ditch passing through a part of the farm into the river also contained much sludge. The town of Aldershot is sewered, the sewage being treated separately from that of the camps. It is conveyed to a piece of land abutting on the Blackwater by the "County Bridge," where it is first lifted into tanks in which it is treated with chemicals, and is then run over some under-drained osier beds. I found the effluent very indifferent. It had a bad odour, and about half a mile lower down there was much foul-smelling, black sludge and sewage fungus in the river.

The Chertsey and Addlestone Bourne.—The Bourne joins the Wey near its junction with the Thames, between three and four miles above the first pumping-station. The sewage from Virginia Water Sanatorium is treated on under-drained land, the effluent being discharged into a ditch which joins the stream skirting Thorpe Green. I found much offensive black sludge in that ditch, but since that time an improvement has been effected by under-draining the sewage land at a greater depth. There are many tub-closets in Addlestone, which are systematically emptied by the Chertsey Rural Sanitary Authority. Their depôt for that part, where I saw a large accumulation of night-soil, is at Ham Moor. By the side of it there was a very dirty ditch, joining a polluted stream which was in a filthy condition. This stream a little higher up passes by a laundry and some farm premises, and in a short distance flows into the Bourne. There was much slop pollution at Chobham. One road sewer discharges into the Bourne; it is a brick barrel sewer, and I saw a great deal of foul black deposit in it at its outfall. Another road sewer in which there was also a foul deposit, delivers into a stream joining the Hale Bourne. I saw a pig-stye close to the edge of this Bourne, which must drain into it. I observed much sewage pollution of the Windle Brook at Bagshot. There are road sewers, and a stream, partly culverted, flows through the village to the brook. Premises used to drain straight into the road sewers, but the deposit and paper in the brook were objected to, so cesspools and an intercepting tank with overflows into the road, sewers and culverts have been made. I observed a filthy ditch, into which house slops are thrown, above the "Hero of Inkerman" public-house. The stream passing through the village showed signs of pollution. I saw several places where house drainage was delivered into it. Mostly highly offensive sewage from the houses below the Bagshot Institute was being discharged into the brook, and I saw other very foul sewage discharges and much sewage fungus.

The Wey and River Wey Navigation and Basingstoke Canal.—The Wey and canals join the Thames together below Shepperton Lock, between three and four miles above the first pumping-station. Weybridge is fast increasing in the lower part called Portmoor Park. There it much sewage pollution. On the east side of Weybridge Bridge a sewer delivers into the Wey. I there saw an enormous quantity of black sludge in the river. A surface water-sewer in High-street receives slop-water, and, doubtless, cesspool overflows. It discharges into a ditch, in which I found a very bad sewage deposit, and which passes through Portmoor Park into the Wey. At Stoke-next-Guildford, a drain from twenty-five houses at Stoughton-terrace delivers into a hole in the ground, which overflows into a brook which was in a filthy condition, and which flows into the Wey. Some pig-sties close to its edge must also drain into it. At Stoughton-land there are over a hundred houses parallel to and very near the Wey, which drain into cesspools affected by the river level. At Bellfields, the "Bell" public-house, with a public urinal, and six other houses drain slops by three drains into a very filthy ditch, which shortly joins the Wey. There is no complete system of sewers at Guildford, but the surface-sewers receive house-drainage and some cesspool overflows, consequently there is much pollution of the Wey from that place. It is, however, now being sewered, but the effluent from the sewage works of the completely-sewered place will go into the river. It will not be necessary to deal with this, because a scheme for the sewerage of the borough has been sanctioned by the Local Government Board. All the house refuse from Guildford is deposited on ground sloping down to a branch of the brook. There was a large heap of very offensive refuse, and it appeared as though drainage from it might reach the brook in wet weather. Cranleigh, on a branch of the same stream, is sewered, and there is much sewage pollution at the outfall. The sewage is treated on a small strip of land, with very stiff subsoil, which is utterly unfit for the purpose. Some osiers are grown on it, but many appear to have been killed. I found the place a perfect swamp, sewage oozed into the stream in several places; the main part, however, was running off the surface in a foul, unpurified state, into the brook, which it made very turbid. I believe a system of precipitation and filtration is going to be adopted there. At Bramley I found much pollution of the stream from a sewer outfall. There is very serious pollution from a large tannery a little below the village. There appeared to be some pretence at land treatment, but I saw much highly-polluting fluid passing straight into the river, which was in a foul state below the outfall.

As already indicated, what Mr. Ashby has done for the Thames below Oxford, Dr. G. H. Fosbroke has done for the Thames and its tributaries above Oxford, having traversed 400 miles in making his examination. A summary of the results of it we hold over, together with Dr. Frankland's scientific evidence on the effects of all the pollution on the river as a source of water supply. The Commission held two more sittings last week, and has adjourned until after the General Election.

MAGAZINES AND REVIEWS.

THE *Gazette des Beaux-Arts* devotes again a long article to the Salons of 1892, in which M. Pottier goes a good deal into the question of polychromatic sculpture, in reference to M. Gerôme's two works. In regard to the "Bellona" which M. Pottier seems to admire much in execution, he says, "Si j'ai un reproche à lui faire, c'est de vouloir étonner. Elle frappe l'attention, mais elle frappe un peu brutalement." An article by M. Paul Lefort is devoted to the exhibition of "Cent Chefs-d'œuvre" (referred to elsewhere in our columns). The writer speaks very highly of the English School as there represented, among other things observing that our painters have always excelled the French in the pourtrayal of the "vraie jeune fille," and instances a portrait by Hoppner. Is it perhaps because we have a more genuine kind of article to paint from? M. de Wyzena contributes the last of his series of enthusiastic articles on Lawrence, which is accompanied by a delicately-executed chromolithograph from a profile portrait of a young lady by Lawrence which goes far to justify all M. Wyzena's admiration. He sums up with the remark that no artist was ever more sincerely desirous to do the best, and more cruelly severe on himself. It will be odd if the French, often either jealous or ignorant of English painting, have discovered a new great master for us. But we hardly think Lawrence will be written up to the level of Reynolds and Gainsborough. The number concludes with the second article on "Le Sculpture Copte," by M. Gayet, and contains also an article on "Le Ceramique Persane du XIII^{e} Siècle" by Mr. Henry Wallis; both largely illustrated.

The *Art Journal* starts with an article on "Art Critics of To-day" with some portraits. It might have been useful (though unpleasant) if the writer had endeavoured to draw some line between those among the "persons represented" who have really a right to the name of "critic" and those who have not: in some cases at least the title "art-critic" seems to be easily earned and lightly worn. "Outings in India" (III.), by Mr. A. Hudson, gives some interesting illustrations of Indian scenery and buildings. Herr Van Westrheene contributes an illustrated article on Christoffel Bischopp and his paintings, and Mr. Claude Phillips continues his review of the French and English exhibitions of the year.

The *Magazine of Art* includes an article by Mr. Cosmo Monkhouse on "Alfred Stevens," with a portrait and some other illustrations. Mr. Spielmann contributes one on "Van der Straeten," the sculptor of subjects that are, as the writer of the article admits, hardly within the true range of sculpture, though clever in their own way. Professor Herkomer's second article on "Scenic Art" is the most interesting in the number, and contains a good many new suggestions, among others that of a contracting proscenium so as to give the proper proportion to a cottage room, for instance, instead of making it as large as the drawing-room of a mansion. The remarks on methods of getting effect in scene-painting show how distinctly Professor Herkomer has thought for himself in carrying out this branch of art in his own theatre.

The *Antiquary* contains an article on the "Church Plate of the County of Wilts," with various illustrations; one on the Romano British Church at Silchester, and various other matters of antiquarian interest.

The *Century* contains a very interesting illustrated paper by Dr. Waldstein on his discovery of what seems probably to be the tomb of Aristotle, and the second paper on architecture at the Chicago Exhibition, by Mr. H. Van Brunt, with illustrations of various buildings, and one of a figure of "Abundance" for the agricultural building, which rather reminds us of the French sculptor's remark in "The Wrecker," when he was told that Mr. Dodd's statue of the "Genius of Muskegon" was intended for a kind of Préfecture,—"Qu'est-ce-que vous me chantez là? Oh, in America; very good, very good." The number contains an article on Daubigny and his works, with a portrait and some reproductions from his sketch studies.

Harper's Magazine continues Mr. Millet's interesting and well-illustrated series "From the Black Forest to the Black Sea," and includes a short illustrated article on "Ancient Gold Work" by Mr. Cyril Humphreys-Davenport.

The *English Illustrated* has some notes, partly historical, on Henley and its regatta, with illustrations of Fawley Court, and an article on "Rimini" by Mdme. Helen Zimmern with admirable illustrations by Signor Norberto Pazzini. Another article is on Trinity College, Dublin, with illustrations (rather slight) by Mr. Herbert Railton, and another on the Great Eastern Railway works at Stratford, by Mr. Parker, secretary to the Locomotive Superintendent. Altogether a good number.

In *Longmans'* "Vernon Lee" gives an article "in praise of old houses," suggested by a spirit of opposition to the sentiment of objection to an old house "because there seemed to be other people in it besides the living," which Vernon Lee thinks is just its recommendation. The article deals with what may be called the "historic sense" in regard to ancient buildings and scenes.

The most important article in *Scribner* is one by E. H. and E. W. Blashfield on the "Art of Ravenna," a great subject which is seriously handled and fairly well illustrated. The essential quality of the school is summed up in the expression that "while art became degraded in form it became glorious in colour."

In the *Gentleman's Magazine* Mr. Cyril D'Oyle considers how to make London smokeless,—viz., by the universal use of gas fuel. It might render London comparatively smokeless, but with the air not the less chemically impure; and what about the vast increase of gas-works necessary? Mr. D'Oyle suggests gas-making at the coal-pits mouth, thereby saving the expense of transport of coal. There is something in that; but we do not think people will take universally to gas fuel. In the same magazine Mr. G. A. Sekon tells "the Story of the Broad Gauge." Few people know that the Great Western terminus was to have been at Euston, conjointly with the London and North-Western. Mr. Sekon makes the shrewd suggestion that if a more energetic and enterprising company had had the broad

gauge, it never need have been taken up, and we are disposed to agree with him.

Temple Bar has also the story of "First and Last Days of the Broad Gauge," by "R. B.," who gives some extraordinary stories of the cool way of working a railway in those early days; sending out an engine on the up line to look for a late up train, to the imminent danger (sometimes only just avoided) of the two meeting in collision, &c., &c.

The *Cornhill Magazine* has a readable article on "Old Oak Chests," which recounts the process of manufacturing them with dates on and everything complete. As a test, it is suggested to prod a seemingly ancient chest with a penknife. If it is really old, the knife will scarcely penetrate.

All the Year Round contains a popular article on "Chatham and its Dockyard."

COMPETITIONS.

BISHOPSGATE FOUNDATION NEW INSTITUTE.—We are informed that the plans of Mr. C. Harrison Townsend, F.R.I.B.A., have been selected in limited competition. The cost of the new buildings, comprising a Public Library and Assembly Hall, will be 20,000*l.*

DOUGLAS HIGHER GRADE AND TECHNICAL SCHOOLS.—We are informed that at the last meeting of the Douglas School Board, the designs of Mr. Thomas W. Cubbon, of Birkenhead, were selected in a limited competition, accommodation being provided for 300 children at a cost of about 4,000*l.*

HOYLAKE AND WEST KIRBY LOCAL BOARD OFFICES.—On Monday evening a meeting of the General Purposes Committee of the Hoylake Local Board was held to receive the assessor's report on designs submitted for the above-named building. Mr. Cubbon has been awarded the first premium, Mr. Thomas Cook, of Liverpool, the second premium, Mr. Keefe, of Liverpool, the third, and Mr. Ware, the fourth. The cost of the new building will be about 3,000*l.*

Illustrations.

NEW MUNICIPAL BUILDINGS, OXFORD.

WE give the perspective view and the two principal plans of the design by Mr. H. T. Hare, which has been selected in the second competition for the Oxford Municipal Buildings. We have already described and commented on the design and plan at some length in our review of the competition (see *Builder* for June 25), and pointed out the excellent character of the planning. The strength of the design lies in the plan, but the exterior shows a dignified building, and one which is suitable to Oxford, and we may on the whole look upon this as a competition with a very satisfactory result.

WARNHAM LODGE, SUSSEX.

THE drawing, now at the Royal Academy, of which we publish a reproduction, shows the garden-front of a wing erected last year, the initial object of which was to provide bachelors' rooms on the upper floor; and in order to utilise the ground floor, new kitchen and offices were provided, as shown by the plan. The facings are of local red bricks, the masonry being of Manning's Heath stone.

Messrs. Batterbury & Huxley, of London, were the architects. The work was carried out by Mr. Joseph Potter, builder, of Horsham.

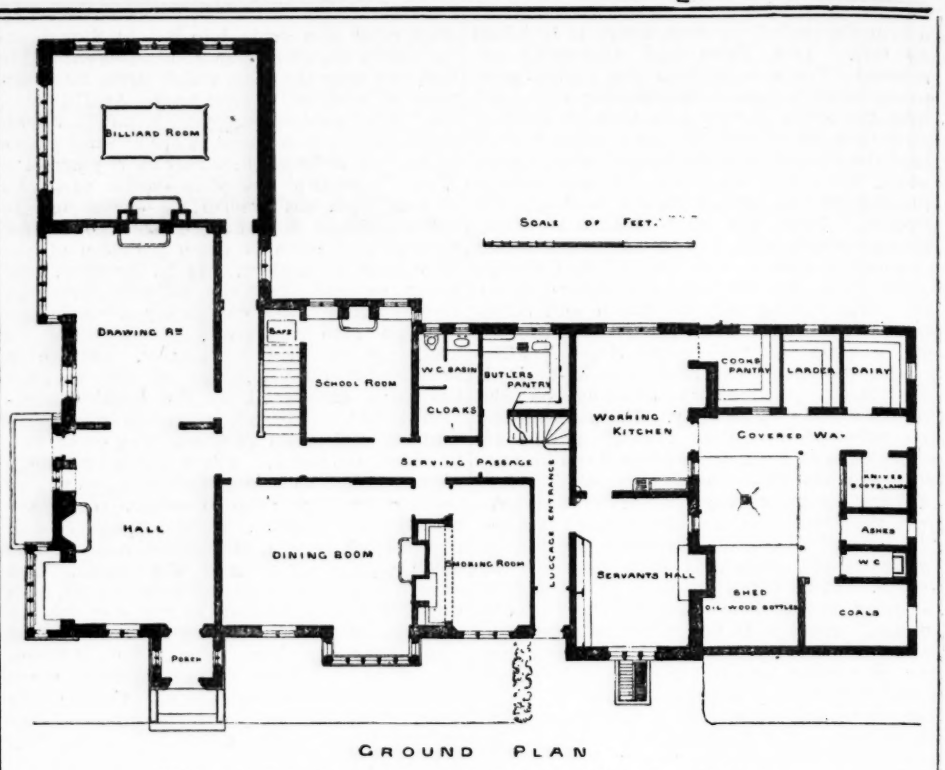
KIRKLEVINGTON GRANGE, YORKSHIRE.

THIS is the addition, in a stone district, of the principal parts of the house to an existing building, the view showing the southern or garden front. A plan is given in the corner of the plate, showing the outline of the front of the old building, and the manner in which the addition has been made.

The architect is Mr. E. J. May, and the drawing is hung in the Royal Academy Exhibition.

"FIRSDENE," BROMSGROVE.

THIS illustration is taken from a coloured drawing of the house hung in the present Royal Academy Exhibition, and which indicates a Bromsgrove stone walling of ashlar face, Colley Weston slate roofing, and red-brick chimneys. Mr. Henry Lovatt, of Wolverhampton, submitted the lowest tender, amounting to 3,918*l.* The architects are Messrs. Bateman & Bateman, of Birmingham.



GROUND PLAN

Plan of "Firsdene."—Messrs. Bateman & Bateman, Architects.

BARRETT-BROWNING MEMORIAL BUILDING, LEDBURY.

THIS is the perspective view and two plans of the design, by Mr. Brightwen Binyon, which has been accepted in the competition for a building to be erected at Ledbury in memory of Mrs. Barrett-Browning, who was a native of the town.

The building comprises a "Clock Tower and Institute," the main requirements we mentioned in our review of the competition in the *Builder* for May 28th. The small plan is compact and well arranged, and makes the most of the space.

STAIRCASE, TOWN-HALL, BATTERSEA.

THIS drawing shows a view of the intended staircase in this building, of which Mr. Mountford is the architect, but which is not yet commenced.

The main building will be of brick and the stone dressings of Monks Park Bath stone, which stone will also be used in the principal staircase, here shown, and which, as will be seen, shows a certain architectural affinity with the larger staircase for the Sheffield Municipal Buildings, by the same architect, illustrated in a former number of the *Builder*.

EXTENSION OF COLLEGE BUILDINGS, EDINBURGH.—On the 23rd ult. the Governors of George Watson's College for Boys, Edinburgh, resolved, according to the *Scotsman*, to carry out various alterations at that institution. The plans for the alterations on the College, prepared by Messrs. Macgibbon & Ross, Edinburgh, provide for the addition at each end of the present building of a projecting wing of three stories, with staircase towers in the angles, rising to a height of 70 ft. to 80 ft. In each story of the wings there are two rooms, measuring 30 ft. by 25 ft., having lofty ceilings, and being suitably lighted and ventilated. One of the wings will be devoted exclusively to the elementary department of the College, and the other will be utilised in the way of increasing the general efficiency of the institution, without giving accommodation to a greater number of pupils than at present. The style of architecture is in keeping with the outstanding features of the main building. The scheme of alterations further includes the construction of a large covered gymnasium in the ground at the north-west corner of the College, measuring some 70 ft. by 50 ft.; while at the north-east corner a workshop and a laboratory will be erected, each measuring about 60 ft. by 25 ft.

ARCHITECTURAL SOCIETIES.

GLASGOW ARCHITECTURAL ASSOCIATION.—The usual monthly meeting was held in the Rooms, 114, W. Campbell-street, on Tuesday night, the President in the chair. A paper was read by Mr. Walter Watson, on "Local Building Stones." The author described the qualities of the more important examples in use in the West of Scotland. A short discussion followed, opened by Mr. D. McKerrow. Thereafter a paper on "Cements" was read by Mr. F. V. Burke, who confined his remarks almost inclusively to Portland cement; pointing out the great variety in quality and consequent inaccuracy of tables giving the strengths, which are published, and that only by testing the actual example to be used can a satisfactory conclusion be arrived at. A lengthy discussion followed, opened by Hugh Dale.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday afternoon, Mr. John Hutton, the Vice-Chairman, presiding. Owing to the large number of members absent on electioneering business, as candidates or helpers, there was a comparatively small attendance, and only formal business was taken.

New Member.—Mr. Blake, the member elected for Central Finsbury in the place of Mr. Bowen Rowlands, was introduced and took his seat.

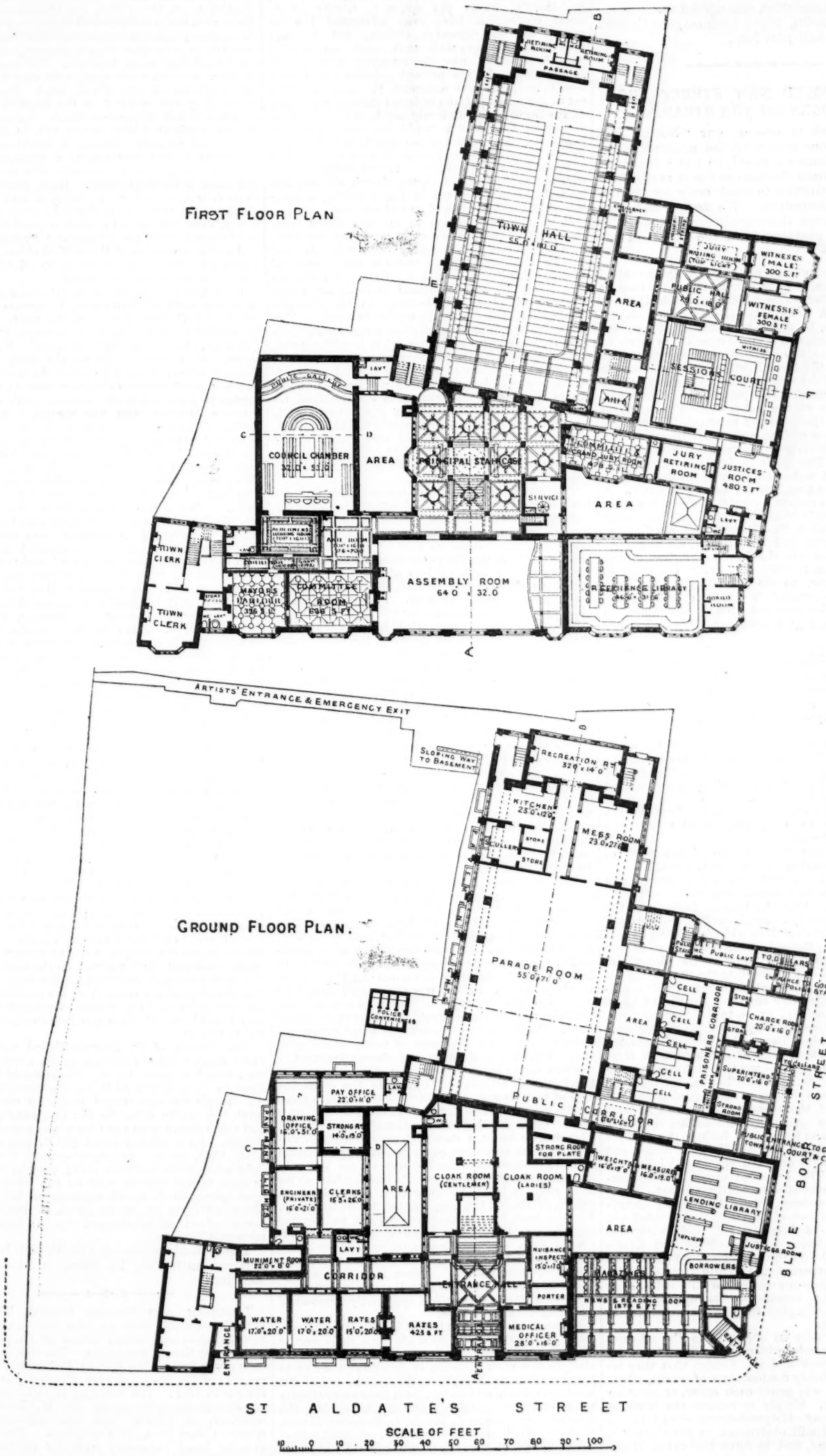
Tenders.—Tenders were received for erecting a new palm-house in Battersea Park, and for supplying 6,000 tons of lime at the sewage outfall works. The lists will be found on another page.

Rosebery-avenue.—The Improvements Committee reported that the last remaining section of Rosebery-avenue,—that between Farringdon-road and Garnault-place,—is now complete, and that the formal ceremony of declaring that important work open to the public will take place this Saturday, July 9.

Lincoln's Inn-fields.—The Parks Committee reported as follows:—

"We have under consideration the question of acquiring by compulsion the garden in the centre of Lincoln's Inn-fields for public use, Parliament having refused in the last session to pass a clause in the Council's General Powers Bill enabling a voluntary agreement to be arrived at. We are strongly of opinion that the Council should leave no step untaken which might secure to the public the use of this garden, situated as it is near the densely-crowded neighbourhood of Drury-lane and Clare-market. We therefore recommend,—

'That the Council do take steps for the opening of Lincoln's Inn-fields garden to the public, and refer it to



Accepted Design for Oxford Municipal Buildings; Plans of Principal Floors.— Mr. H. T. Hare, A.R.I.B.A., Architect.

the Parliamentary Committee to consider what action should be taken.'"

The recommendation was agreed to.

After discussing other business, the Council adjourned at half-past four.

THE PROPOSED NEW STREET FROM HOLBORN TO THE STRAND.

WE referred in one of our "Notes" last week, and in our report of the proceedings of the London County Council, to the scheme for a new street from Holborn to the Strand which has been submitted to that body by its Improvements Committee. We now give a plan of the projected thoroughfare, together with the following passages from the report of the Committee:—

"Of all the improvements required by the actual traffic of London, none is now more urgent than an adequate and direct thoroughfare between Holborn and the Strand. The removal of the bars on the Bedford estate, to which the Council attached so much importance, and also the opening of parts of Rosebery-avenue, have caused a great and sudden increase of traffic from North of Holborn down to the Strand and the river. When Rosebery-avenue is completely opened this will be much increased. The obstruction at the point where Southampton-row and Little Queen-street intersect Holborn has now become most serious, and we are informed that sixteen constables are required to regulate the traffic there. The block in Little Queen-street is almost constant, and at all hours of the day vehicles are brought to a standstill for several minutes. A reference to the map will show that this is the point to which the whole of the immense and increasing traffic from Euston, St. Pancras, and King's-cross stations, Islington and Bloomsbury, converges on its way southwards to the Strand and Fleet-street, or the river and bridges. From Holborn, at Southampton-row, to the Strand, the only communication at present is through narrow, circuitous, and disconnected streets and lanes, in parts passing through a most insanitary and dilapidated district.

After carefully considering a variety of competing plans, we now submit to the Council the following scheme, the aim of it being as follows,—

(*a*) To combine a first-class thoroughfare from Holborn to the Strand with the widening of the Strand at Holywell-street and at St. Mary-le-Strand.

(*b*) To open a direct thoroughfare from the north to the Strand, Temple Bar, Fleet-street, and the Embankment going eastwards, as well as for the traffic towards the Strand, Wellington-street, and Waterloo Bridge westwards.

(*c*) To improve the communication between the Covent Garden or Long-acre district and the Lincoln's Inn district.

(*d*) To open and improve one of the most insanitary and decaying quarters of London.

(*e*) To offer an opportunity for a central and commanding site for a new County Hall.

It will be seen that the leading features of the new scheme are—(1) to combine the Holborn and Strand thoroughfare and the widening of the Strand in a single plan, instead of dividing them in two plans; (2) to obtain a much more direct and effective avenue from Holborn to the Strand than is possible in the Catherine-street scheme;* (3) to provide for the traffic after reaching the Strand to go eastwards to the City, or on to the Embankment, instead of directing it solely towards Charing-cross and Waterloo-bridge. These objects would be effected by driving a new avenue of great breadth from Holborn at Little Queen-street straight southwards to the church of St. Mary-le-Strand, setting back the Strand at the junction, and opening out the southern end of the avenue east as well as west on two inclines gradually descending into the Strand. Of course this would include the removal of the block of houses south of Holywell-street, and the dealing with the enclosed spaces adjoining the two churches. The proposed street would intersect Great Queen-street, Sardinia-street, Vere-street, Stanhope-street, Wych-street, and Drury-court, and would pass close beside the crowded and insanitary area of Clare-market and contiguous streets lying between Sardinia-street and King's College Hospital. At the same time, we propose to widen Blackmoor-street and White Hart-street by setting back their south-eastern or City sides, so as to afford a direct communication into Catherine-street and Wellington-street, and thence to Waterloo Bridge.

It is undoubtedly an objection to the schemes presented last year for widening the Strand and for connecting Holborn and the Strand, that they involved two perfectly distinct sets of works, which did not in any way assist each other, or combine with each other. Simply to remove the block of buildings south of Holywell-street would be to leave the Strand still obstructed by the Church of St. Mary-le-Strand, and to force the entire traffic (which would have on the east of the church a breadth of more than 100 ft.) to pass south of St. Mary's, where the space is hardly 50 ft. Some economists have even advocated the removal of this graceful church, but it may be taken for granted that such an act of vandalism would now be received with public indignation. In the present scheme the church would be immensely enhanced in value by being set in the middle of the widened Strand, the traffic of the Strand passing freely north and south of it. Moreover, the church would become the central point of a noble street to the north, and would be visible from Holborn, just as it now is from the western end of the Strand. If the Strand is not widened to the north of it, the church will one day be pulled down, and one of the picturesque landmarks of Old London will be lost for ever.

It is also an objection to the new street from Holborn to Catherine-street as proposed last year, that it provided for the traffic westwards only, and not for the traffic going towards the Courts of Justice, Temple Bar, and the City. To obviate this, it was at first suggested to construct a new spur street along Wych-street to St. Clement Danes, but this was afterwards dropped. The Catherine-street scheme involved a line longer than that to St. Mary's Church (which is just 700 yards), and, if combined with the inevitable spur street to St. Clement's, it would be about one-third longer. At the lower end the gradient was bad,—1 in 35. Again, the Catherine-street plan could afford no architectural termination for a grand new street, nor would it allow of direct access to the Embankment. It would be a curved street of irregular plan set at an acute angle with the Strand, and not opening on to Wellington-street or any other distinct feature of the Strand.

Together with the scheme proposed last year, we have considered a variety of alternative schemes suggested at different times, and we believe that they all will be found wanting the simplicity and breadth of the scheme we now propose. They all fail to deal with the Holywell-street block, and with the very narrow existing bits of the Strand north and south of St. Mary's Church, whilst the scheme we propose, provides for both. The gradients also of our proposed scheme are far easier.

If the new street were carried direct to Waterloo-bridge it would fail to provide for the traffic passing to Fleet-street, the district of St. Clement Danes, and the Thames-embankment; and to meet this traffic, say the whole of that passing from the Bloomsbury, Covent-garden, and Long-acre districts towards Temple Bar, there would be needed a second and very costly spur street through New Inn or Clement's Inn to St. Clement Danes.

The scheme for carrying the new street along the western side of Lincoln's Inn-fields would meet with determined opposition from the powerful legal interest, which would struggle to maintain the quiet of Lincoln's Inn and Lincoln's Inn-fields; and at the same time it involves an ugly, inconvenient, and costly bifurcation at the south-western corner of Lincoln's Inn-fields in order to reach Waterloo-bridge on the west and St. Clement Danes on the east.

Experience has proved that the attempt to avoid the acquisition of expensive buildings in the laying out of new streets by selecting an irregular line ultimately becomes a very false economy. The new street so planned has neither beauty, dignity, nor convenience. It bears the stamp of a make-shift; the costly buildings which were purposely left outside the limits of deviation on the Parliamentary plans, thrust unsightly and awkward ends into the frontage of the new avenue, and entirely ruin any architectural features it might have. The new street at once gets a bad name, and never acquires the character of being a desirable site. The history of many new streets designed in the last thirty years affords abundant evidence of the failure of all make-shift plans in the construction of new streets. A striking example of a large profit being realised from a street planned on a noble scale is that of Northumberland-avenue. This was no doubt a case with exceptional circumstances, such as are not likely to occur again. Even as it is, the avenue is far too narrow for the lofty and magnificent buildings which line it; but, so far as it goes, it is an instance of a large and bold design proving in the long run the truest economy. It has been too much the custom in London to neglect the very material part which is played in a metropolitan improvement by those elements which awaken general interest and strike the public imagination. Hence it is that a large and bold scheme is often both less costly and more convenient than two or three apparently economical and insignificant schemes.

A great artery of London, if it is to be a success, even pecuniarily, must be made on a scale worthy of its importance. A direct street, passing in a straight line from Holborn at Southampton-row to the Strand at St. Mary's, would become one of the most desirable in all London, from its close proximity to the Courts of Justice, Court of Bankruptcy, the Inns of Court, Lincoln's Inn-fields, Somerset House, Holborn, the Strand, and the legal, printing, advertising, journalistic, and theatrical centres. It would receive the whole traffic passing south-westerly from Islington, Rosebury-avenue, Theobald's-road, the Bedford Estate, and the three northern railway stations; and it would divert much of the traffic now passing through Endell-street, Bow-street, Wellington-street, Drury-lane, and Chancery-lane. On these grounds it is suggested that the street should be perfectly symmetrical, and not less than 100 ft. in breadth, so as to allow for lofty buildings of the most important class on its frontage. The northern end of the new street would open, with rounded corners, on Southampton-row, which must ultimately be widened by the removal of the block of buildings between it and Kingsgate-street. Indeed, it is a serious question if this should not be included in the present scheme. Thence it would cross Great Queen-street, and continue, at a distance of about 150 ft., parallel to the western side of Lincoln's-Inn-fields to Sardinia-street. Here, about half-way in its course, should be a circus, at least 200 ft. in diameter, on the site of Sardinia-street and Vere-street, so as ultimately to allow a good street eastwards into Lincoln's-Inn-fields and Portugal-street, and an improvement of Great Wild-street, Kemble-street, and Russell-street, so as to afford a line to Long-acre and to Covent-garden.

Thus the central circus would ultimately communicate with Endell-street, Long-acre, Russell-street and Covent-garden on the west, and with Lincoln's-Inn, the Courts of Justice, College of Surgeons, King's College Hospital, Bankruptcy Court, and Chancery-lane on the east. A wide opening here is needed to allow the traffic passing east and west between Chancery-lane and Covent-garden to cross the traffic passing north and south between Holborn and the Strand. From this central circus the new street would pass in a perfectly straight line to the Strand exactly opposite to St. Mary-le-Strand Church, crossing Vere-street, Clare-street, Stanhope-street, Wych-street and Drury-court, a large part of which is a most insanitary area, with houses only fit to be pulled down. The district generally is described in Mr. C. Booth's book on 'Labour and Life of the People' as having 'a crowded and very mixed population,' and much of it is marked in his map with the dark colours of 'poor' and 'very poor.' Ultimately the bulk of this district lying between Drury-lane and King's College Hospital must be rebuilt, if only because the houses cannot stand much longer, since they are amongst the oldest left in London. Many of the persons who now occupy them are compelled by their work to live in the district, and it is a question whether the formation of a new thoroughfare might not afford an opportunity for the Council to undertake a comprehensive scheme for rehousing the people displaced. This very difficult question should be at once undertaken by the Public Health Committee.

Fortunately the important question of gradients has been completely solved by a scheme of our Engineer. The gradient of the proposed street at no part exceeds 1 in 50, and that only for 150 yards, whereas the gradient of several streets descending into the Strand is at present less than 1 in 30. For the 400 yards from Craven-buildings to Great Queen-street the gradient would be only 1 in 82; and thence to Holborn, a distance of 150 yards, the gradient is not more than 1 in 110. This gives an average gradient of about 1 in 78.

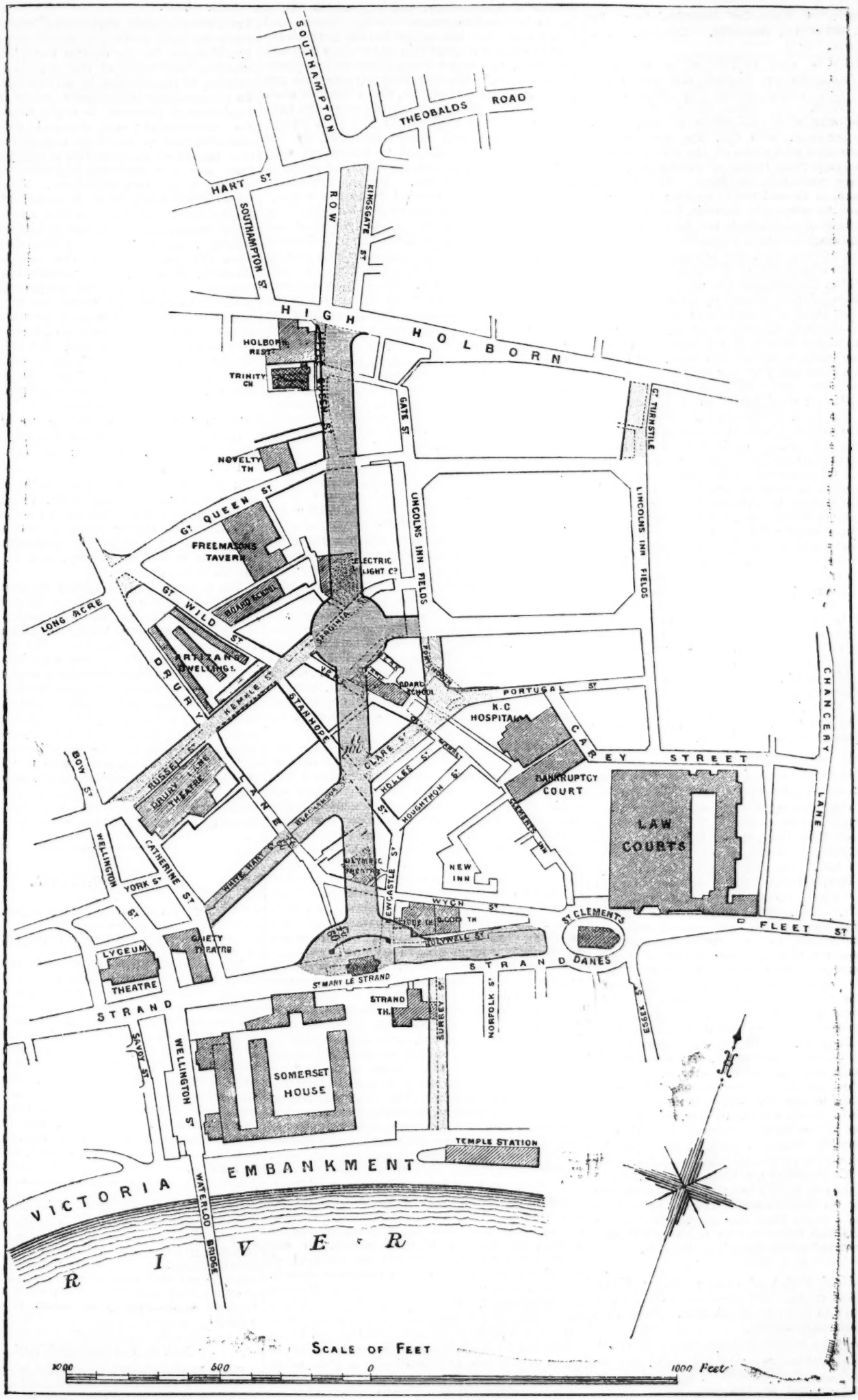
It is proposed to terminate the new street as it approaches the Strand with a terrace at a somewhat higher level than the present level of the Strand, and to bring the road by a gentle curve east and west into the Strand, opposite Somerset House on the west and Surrey-street on the east, opening the ends of the new avenue in a semicircle or oblong. The gradient of the slope from the southern end of the new street into the Strand westwards would be only 1 in 69, and of the slope into the Strand eastwards 1 in 50.

The Church of St. Mary-le-Strand would thus stand cleared from buildings on its northern side for a length of about 400 ft. There would be ample space to allow nearly 60 ft. on the northern side of St. Mary's for the Strand traffic on the present level, the traffic going to the City passing north, and that coming from the City passing south of the church. By a terrace about 200 ft. long and 2 or 3 ft. high, as in Trafalgar-square, the traffic descending from Holborn could pass by two easy inclines either east or west to the Strand. The open space, which would measure on the average about 350 ft. in length by 100 ft. in depth, would easily admit of adornment by a fountain or memorial."

The consideration of the Report has been deferred until July 19, owing to the General Election.

* We published the plan of this proposed street in the *Builder* for July 25, 1891.—ED.

TECHNICAL AND FISHERY SCHOOL, RINGSEND, DUBLIN.—On the 20th ult. the first stone of the new technical and fishery school at Ringsend was laid by the Earl of Pembroke. The site, which has been given free by the Earl of Pembroke, is on the sea side of the town between Cambridge-road and the South Wall. The building is to be erected in accordance with a design by Mr. W. Kaye Parry, architect, of Dublin, and the contractors are Messrs. Collen Bros., of Portadown. The building will be faced externally with red pressed facing brick. The entrance will be at the centre of the eastern façade, and will be surmounted by a tower.



Proposed New Street from Holborn to the Strand, as Recommended by the Improvements Committee of the London County Council.

Books.

Insurance. A Manual of Practical Law. By C. F. MORRELL, Barrister. London: A. & C. Black. 1892.

THIS is one volume of a series of manuals on English law which are now being issued by Messrs. A. & C. Black. It deals in a clear and readable way with the whole subject of insurance, namely, with fire, life, and marine insurance, and with some of the miscellaneous and less important forms of the subject, such as fidelity guarantee insurance. The book is well done, it is sufficiently popular in form to be of use to non-legal persons, but whether a work of this small compass can be of any use to lawyers, except students, appears to be doubtful. To some extent, also, the practical aspects of marine insurance are so different to those of fire and life, the subjects are of importance to such quite different classes of persons, that we cannot but think it would have been better to have put marine insurance in a separate volume. A sketch of the history of the various forms of insurance forms a part of this book, and it will interest a good many of our readers to be told that the first fire insurance office was the Hand-in-Hand, established in 1696, and the second the Sun, established in 1710. From that date offices began to increase with more rapidity, six more coming into existence between the latter date and the end of the century. Of a manual such as this it would be inappropriate to speak at length, but it may be desirable to give an extract in order to show the character of the book. This is the explanation of the word "fire":—"The word fire is taken in the ordinary and popular sense, and in order to substantiate a claim, the loss must have occurred (1) by actual ignition of the property insured, or of some matter near it not intended to give heat, whereby injury has accrued to the property insured; and (2) the fire must have been the proximate cause of the loss" (p. 95). It will be seen that Mr. Morrell states his proposition clearly and without undue elaboration. There must be many of our readers who will be glad to have this book on their shelves, even though they may never have to open the pages which touch on the subject of marine insurance.

Road Construction and Maintenance. New York: *The Engineering Record* Office. 1892.

THIS is a collection of prize essays, reprinted from our contemporary, *The Engineering Record*, of New York, the results of a competition instituted by that paper, and completed in March last. America being comparatively a new country, a large portion of the essays is naturally taken up with the construction of new roads. The relative merits of the Telford and McAdam systems are considered—the former appearing to be most in vogue. We think, however, that the Telford system is only suitable for city and town roads, and that even then it is one of doubtful economy. Interesting particulars are given as to earth, sand, and clay roads; and a description of brick pavements, which, as far as we are aware, have not been tried in England. With regard to the maintenance of macadamised roads, very great stress is laid upon drainage of the subsoil, selection of the best available material, constant repair, and the use of the steam-roller is most strongly advocated—points which, we fear, are too often neglected in our own country roads. One of the essayists draws a parallel between the civilisation of a people and the condition of its roads. We sincerely trust that our civilisation may not be put to this test; though we believe American civilisation would come out, on such a test, still worse than our own. We recommend all those interested in the improvement of our "ways" to obtain this little book.

Biographical Sketch of George Meikle Kemp, Architect of the Scott Monument, Edinburgh. By THOMAS BONNAR, F.S.A.Scot. Edinburgh W. Blackwood & Sons.

IN spite of the atrocious character of its detail, the Scott monument at Edinburgh may be recognised as a creditable attempt to originate something special in the way of a modern monument; there is an idea in it, and the man who designed it, considering his disadvantages of education, must be admitted to have possessed ability and some force of character, and as such, was worth commemorating in a biography. From Mr. Bonnar's book we learn that George Meikle Kemp was born in the last decade of last century, and of humble origin. In his boyhood he was sent to herd cattle, and it is stated that his father having gone to see how the lad was attending to the duty imposed upon him, "he found him setting mills a-going in the burns." Finding that his son was not fitted to be a shepherd he, like a sensible man, took steps to permit of his following the bent of his mind and apprenticed him to a wright and carpenter, and being employed by his master in various matters in connexion with mansion-houses and farm-buildings, he acquired a taste for architecture. He set himself to cultivate his mind, studied "the five orders," and learned the art of drawing. After acquiring sufficient mastery of the pencil, he visited and took drawings from Rosslyn Chapel, Melrose Abbey, and other Gothic remains, which excited his admiration, ultimately extending his visits to England and France. Mr. Bonnar narrates that upon one occasion when Kemp was in the neighbourhood of Melrose, trudging along the road to Galashiels, clad in workman's garb, with his tools slung over his shoulder,

"He observed a gentleman in a carriage, who had evidently directed his coachman to ascertain how far the burdened traveller was going. On receiving the desired information, Kemp was asked to take a seat beside the coachman, and, accepting the welcome invitation, he was driven to Galashiels, where, on his alighting, some of the people standing by, remarked that he had been riding with the 'Shirra.' He then discovered that the kindly and considerate gentleman was no other than Sir Walter Scott, who had chanced to be travelling in that district in the discharge of his duties as Sheriff of Selkirkshire."

Shortly after Sir Walter's death a subscription was set on foot for the purpose of raising a fund to erect a memorial worthy of "The Wizard of the North." This appeal was adequately responded to, and a Committee was formed to procure designs, who advertised offering three prizes of fifty guineas for the three best. When the award was announced it was found that a design by Mr. Rickman was placed first, one by Mr. Charles Fowler, architect, and Mr. R. W. Sievier, sculptor, second, while the third was given to an unknown artist, named "John Morvo," the name adopted by Kemp.

None of these designs were adopted, but the competition was reopened. Although that of John Morvo had made a deep impression, it was thought that to recommend the work of an unknown man, who had no professional training as an artist, would be a rather hazardous course to follow. In the second competition, additional competitors appeared, — amongst others, David Roberts, R.A. In entering upon the second trial, Kemp adhered to his original conception with some modifications, which were thought to be improvements, and ultimately his was adopted. Whether there was anything in the competition better worth adopting, it is impossible to say now.

This sudden uprise to fame of one previously unknown has something of the romantic element in it, and that is followed up by the tragic end of Kemp's career, shortly after his great success. His body was found in the Forth and Clyde Canal, and a suspicion of suicide lingered around the event. Mr. Bonnar, however, contends that there is no ground whatever for that surmise; he was in a position to look to the future with the brightest hopes, and to see his great work realised would surely have been a sufficient cause to make him desire to live. The occurrence is a sufficiently melancholy one in itself, without calling in the supposition of suicide.

As Kemp was not in practice as an architect, there are no other works of his to point to but the Scott Monument. There are some designs of his on paper, amongst others a scheme for completing Rosslyn Chapel, which, as our readers are aware, is merely the chancel of what was intended to be a complete church. He also made a drawing showing Melrose Abbey restored. In the present day it is somewhat difficult for any one with a knowledge of the best Gothic style and detail to feel much toleration for his celebrated Monument, but in those days it was unquestionably a great effort for a self-taught man, and one must regret that its author did not live to obtain chances of improving his knowledge of Gothic detail by the study of purer examples than Melrose and Rosslyn, and of possibly producing something better than the one structure by which his name is known.

Simple Explanations of Engineering Formulæ. By R. W. WESTERN. London: B. T. Batsford. 1892.

STUDENTS of civil engineering commencing to study for their profession should be grateful to Mr. Western for his capital book, in which he explains how many of the principal formulæ relating to the stresses in girders are derived. To thoroughly understand many of these fundamental formulæ, a slight knowledge of the differential and integral calculus is desirable, but so small an acquaintance with this branch of mathematics is really necessary that any one knowing algebra can easily acquire it in a very short time. Many authors try to avoid using what is termed the higher mathematics, and to show how some formulæ are obtained, they are forced to adopt laborious methods, generally more difficult to master than the rudiments of the calculus. Mr. Western, however, first teaches his readers sufficient calculus for his purpose, and then proceeds to apply this knowledge to practical questions. There are many engineers who, day after day, make use of rules and formulæ which they are unable to deduce; but if they will carefully study this little book, it would not be long before they are able to verify for themselves what before they have blindly accepted.

Electrical Instrument Making for Amateurs. By S. R. BOTTONE. Fifth Edition. Revised and Enlarged. London: Whittaker & Co. 1892.

WE have already noticed an earlier edition of this work (*Builder*, August 31, 1889), and we have little to add to the opinion then expressed. Mr. Bottone's strong point is still the clear description of details of manipulation, his weakness is still in theory, and in all that relates to the dynamo.

The preface to this edition announces that the author, at the suggestion of Mon. Pellissier, has added "a few simple instructions for making a small arc lamp, an incandescence lamp, a current reverser," &c. We turned with interest to these, for we felt some curiosity as to what an amateur's glow lamp might be.

We find a wonderful arrangement in cork, red sealing-wax, and benzine vapour (the last in place of a vacuum), with a platinum filament, which "will glow with a cherry-red light when a current of one ampère is passed through it." For this it is claimed that it "illustrates in a satisfactory manner the mode in which the superior carbon filament lamps act." So it does—but a hair-pin would illustrate it quite as well, and with much less trouble.

Correspondence.

To the Editor of THE BUILDER.

ROMAN BRICKS AND CONCRETE.

SIR,—In your article on concrete you refer to Professor Middleton's opinion that the brick facing of Roman walls is not strong enough to support the concrete hearting while wet, and his reason for believing that timber uprights were used in the walls of Nero's Golden House. If this be so, it seems odd that so economical a people as the Romans should have wasted time and money on this brick facing, which was to be plastered or covered with marble; but it is surely worth the while of some one to make the experiment. Oven tiles cut diagonally would make the facing of a pier, say a yard square, and *pozzolana* may, I think, be obtained in London. G. AITCHISON.

IRON IN CONFLAGRATIONS.

SIR,—I shall be glad if some of the readers of your valuable paper could inform me whether rolled-iron joists and cast-iron columns are injuriously affected by being exposed to the effects of water played upon them in a severe fire. If bent, of course, they must be rejected; but if not, would they be as trustworthy as before for carrying weight? A. B.

PAVING COMPOSITION.

SIR,—I have a small floor to lay on wood blocks in a district some twenty miles from any station, for which it would be very costly to send a specialist to do the work. Will any of your practical readers kindly give me recipe for making composition for this purpose, stating proportions of pitch, &c., also quantity required for, say, 20 yards super? W. H. T.

CRYSTAL PALACE ELECTRICAL EXHIBITION.

The following are the Awards made by the Jurors:—

DIPLOMA OF HONOUR.

H.M. Post Office
L. B. & S. C. Railway Co.
L. C. & D. Railway Co.
L. & N. W. Railway Co.
National Telephone Co.
Exchange Telegraph Co.
Crossley Bros.
Swinburne, J., & Co.
Willans & Robinson

DIPLOMA OF HONOUR AND GOLD MEDAL.
(Highest Award.)

Brush Electrical Engineering Co.
Crompton & Co.
Edison & Swan United Electric Light Co.
Johnson & Phillips
Siemens Bros. & Co., Ltd.

GOLD MEDAL.

Coxeter & Son
Davey, Paxman, & Co.
Easton & Anderson
Electric Construction Corporation
Electrical Power Storage Co.
Glover, W. T., & Co.
Henley's, W. T., Telegraph Works Co.
The Laing, Wharton, and Down Construction Syndicate
Nalder Bros. & Co.
Saxby & Farmer
White, J.

SILVER MEDAL.

Acme Electric Co.
Anderson, R., & Co.
Andrews, J. E H.
Andrews, J. D. F., & Co.
Armstrong's Glass Co.
Barclay & Son
Benham & Froud
Bristol, L.
Britannia Rubber & Kamptulicon Co.
British Gas Engine Co.
British Stone & Marble Co.
Browett, Lindley, & Co.
Campbell Gas Engine Co.
Chubb & Son
Consolidated Telephone Co.
Davis & Timmins
Day & Co. (Bath)
Dent & Co.
Dick, Kerr, & Co.
Edison Manufacturing Co.
Epstein Accumulator Co.
Ferranti, Ltd.
Fielding & Platt
Fowler-Waring Cables Co.
General Electric Co.
Giles, F., & Co.
Groves, W.
Groth, L. A.
Gulcher Electric Light & Power Co.
Hammer, W. J.
Joel, H. F., & Co.
Laing, Wharton, & Down
Lloyd & Lloyd
London Metallurgical Co.
Mosses & Mitchell
Osler & Co.
Rashleigh Phipps & Dawson
Richard Frères
Richards, F. M.
Scott, Ronald A.
Shirley & Co.
Trent Gas Engine Co.
Warby, J. L.
Waygood & Co.
Wells Bros.
Western Electric Co.
Weymersch Battery Syndicate
Woodhouse & Rawson

BRONZE MEDAL.

Allsop & Co.
Anders, Elliot, & Chetham Strode
Appleton, Burbey, & Williamson
Archer Pipe Co.
Becker & Co.
Bishop, W. J.
Bowron, G.
Burnby & Son
Capitaine Gas Engine Co.
Charlesworth, Hall, & Co.
Cooper, H. & J.
Croggon & Co.
Dorman & Smith
Electric Stores, Ltd.
Faraday & Son
Fowler, Lancaster, & Co.
Habgood, W. J.
Hindley, E. S.
Hookham, Townley, & Co.
Homacoustic Speaking-tube Co.
International Electric Co.
Jenner, T.
Jennings, G.
Jooss, A.
Lacombe & Co.
Lewis, J.
Lundberg, A. P.
Maquay Electric Light Syndicate
Mayer, H.
Mining and General Electric Lamp Co.
Napier & Son
Newton. F. M.
Riedel, J.
Roberts, Adlard, & Co.
Roper's Electrical Engineering Co.
Smith, Samuel, & Son
Spencer, Edward, & Co.
Spencer, J.
Stegmann, G.
Taylor & Tucker
Telegraph Manufacturing Co.
Thorpe, Harry
Tipping, H. S.
"Trusty" Engine
Wilson Hartnell
Ziety & Co.

The Students' Column.

CONCRETE.—II.

I.—LIMES.—CLASSIFICATION.

LIMES are not all suitable for use in concrete. Some of them possess the property of setting under water to a considerable extent, and will eventually attain great strength in such a position, while others are almost entirely soluble in water, and are therefore useless in damp situations. Some have an inherent power of hardening in the presence of water, whereas others merely dry to a friable mass. They are usually classified as follows:—

1. Rich or pure or fat lime.
2. Poor or impure or meagre lime.
3. Hydraulic lime.

1. *Rich Lime.—Composition.*—Rich lime is burnt from stones which consist almost entirely of carbonate of lime (calcium carbonate), such as chalk, marble, and some of the varieties of building stone. Other substances,—silica, alumina, magnesia, oxide of iron, &c.,—may be present to the extent of about 10 per cent. The silica is present in the form of sand, and therefore has no beneficial effect on the setting of the lime.

Calcination.—We do not propose to enter into a detailed description of the modes of manufacturing either limes or cements; it will be sufficient for our purpose if we state broadly the effects of the processes of manufacture. By the burning of calcium-carbonate, the water and carbonic-acid gas which it contains are expelled, and calcium-oxide, commonly called "quicklime," remains. The chemical equation, omitting the water, is thus expressed:—

$$COCaO_2 = CaO + CO_2.$$

Calcium carbonate. Calcium oxide. Carbonic acid gas.

Slaking.—When rich lime arrives on the building-site for use in mortar or plaster, it is in the form of quicklime or calcium oxide, but in that state it is not ready for use. It must first be slaked by the addition of water. Quicklime readily combines with water, and is, if exposed to the atmosphere, gradually slaked by absorbing moisture therefrom; in this slow way quicklime is slaked for agricultural purposes, the little white heaps in fields being a familiar sight in some parts of the country. If, however, a considerable quantity of water be added, the calcium oxide combines with it with much violence and heat, falling to a powder two or three times the bulk of the lime prior to slaking. This increase in bulk, when quicklime comes into contact with water, must be borne in mind, for the fact has an important bearing on the subject of the proper use of hydraulic limes and cements. The chemical change caused by slaking is thus expressed:—

$$CaO + H_2O = Ca(HO)_2$$

Calcium oxide. Water. Calcium hydrate.

Setting.—Calcium hydrate, or as it is usually termed, slaked lime, is soluble in water; consequently a paste made from it does not set or harden under water. There is nothing in its composition, as there is in hydraulic limes and cements, to give it the power of setting merely on the addition of water. Calcium hydrate, if placed in foundations or in the interior of thick walls, where little or no air can obtain access to it, will remain calcium hydrate for years without any increase of strength whatever. In air, however, a certain amount of chemical action takes place, which results in the hardening of the lime. This is effected by the absorption of CO_2 from the atmosphere, but the setting is more apparent than real, for it is only skin deep. And not only is this re-formation of carbonate of lime ($COCaO_2$) a mere skin, it is also of no great strength. It is probable, also, that the lime dissolved by the water used in slaking the lime and making it into mortar and also by the slow absorption of moisture from the air, gradually crystallises, and therefore assists the hardening of the mortar, but as 730 parts of cold water are required to dissolve one part of lime, the crystallisation is decidedly slow. Mortar from the interior of the Pyramids, where it has not been exposed to the action of the air, still contains free lime, although it is 5,000 years old.

Another difficulty attending the use of rich lime is its great shrinkage or contraction during the process of hardening; in order to obviate the ill-effects of this, a large quantity of sand is mixed with it to form mortar. The sand also fulfils another office, for it renders the mortar more porous, and, therefore, assists the passage of air and moisture to the interior of the mortar.

No more need be said to show the unsuitability of rich lime, not for concrete only, but for all manner of building work where cohesive and adhesive strength is required, but a knowledge of the changes which take place in the calcining, slaking, and setting of rich lime is necessary for the proper apprehension of some of the changes which take place in hydraulic limes and cements, and also of the difficulties and dangers attending their use.

Uses.—Rich lime is used for agricultural purposes, for internal plastering, and in the manufacture of Portland cement, slag cement, &c.

2. *Poor Lime.*—Poor lime is burnt from limestones, which contain a considerable quantity (say, from 10 to 30 or 40 per cent.) of matter nearly the whole of which is in such a state as to have no power of combining with the lime and exerting a beneficial effect on the setting of it. In other words, poor lime is rich lime very much adulterated. It has all the disadvantages of rich lime, and one or two more. It slakes more sluggishly than rich lime, and does not increase as much in bulk or fall to as fine a powder. It requires more careful screening and grinding on being made into mortar than does rich lime. It ought never to be used for concrete.

3. *Hydraulic Limes.*—These limes have been so called from the property they possess of setting under water. The word "hydraulic" used in this sense is somewhat of a misnomer, seeing that it is derived from the Greek *hydōr*, water, and *aulos*, a pipe, and really refers to the conveyance or use of water by means of pipes. Custom, however, has sanctioned its use in the sense of "setting under water," and also the use of the noun derived from it—"hydraulicity," which is taken to signify "the property or power of setting under water." Hydraulic limes vary exceedingly in their composition, and consequently in their hydraulicity. The quantity of *lime* present in some is only about 60 per cent., while in others it is 80 or even 90 per cent.; and the time required for the lime to harden under water varies from one or two days to three or four weeks. This variety has given rise to a subdivision of the class into (1) *feebly*, (2) *moderately*, and (3) *eminently* hydraulic, but these subdivisions are somewhat indefinite, merging into one another, and ranging from the verge of rich and poor limes on the one hand, to the verge of natural cements on the other. Moreover, no lengthy list of British hydraulic limes has, as far as we know, ever been made in which the various limes have been classified under these three heads. The nomenclature, however, affords a convenient method of expression, although it has not much practical or scientific value.

Composition.—The most important hydraulic limes owe their hydraulicity to the clay, which forms part of the raw stone. In stones producing feebly hydraulic limes, the clay may be about 8 or 10 per cent. of the whole; moderately hydraulic limes, from 10 to 15 per cent.; and eminently hydraulic limes from 15 to 20 or even 30 per cent. Any excess of clay over 30 per cent. is detrimental to the setting power and strength of the lime.

Another class of limes consists of those which contain little or no clay, but are rendered hydraulic by the magnesia present in them. In the raw stone, producing moderately hydraulic lime, the carbonate of magnesia may be 30 or 40 per cent. of the whole, and the carbonate of lime 50 or 60 per cent. Nearly all limes and cements contain a small quantity, say, 1 or 2 per cent., of magnesia, but it is only when the magnesia reaches about 30 per cent. of the whole stone, that it confers a moderate hydraulicity. The most important class of hydraulic limes, however, is the one in which clay plays a prominent part, and as clay is the ingredient which confers hydraulicity on that most important of all limes and cements, namely, Portland cement, more attention has been devoted to the study of its action in combination with lime, than to that of magnesia with lime. We shall, therefore, devote our attention chiefly to limes which owe their hydraulicity to the presence of clay, or, in other words, silicate of alumina.

Undoubtedly the most important class of hydraulic limes consists of those which are burnt from the blue lias limestone. They vary considerably in their setting power and ultimate strength. The blue lias stone is found at Lyme Regis in Dorsetshire; at Pylle, and Watchet, in Somersetshire; at Barrow-on-Soar, in Leicestershire; at Rugby, Stockton, Wilmcote, and other places in Warwickshire; at Barnstone, near Nottingham; at Kirton Lindsay, in Lincolnshire; at Aberthaw, in Monmouthshire; at Whitby, in Yorkshire, and at various other places in England. At many of these places, the stone is used for the manufacture of Portland cement, which is often equal to that made from chalk and clay, or mud, as at Rochester and other places on the Medway and the Thames.

Feebly hydraulic limes are obtained in many parts of the country, but have merely a local reputation. Some of those used in London are obtained from Sussex.

Other hydraulic limes are burnt from the carboniferous limestones, as at Holywell, in Flintshire, and others again from the magnesian limestones in Yorkshire, Derbyshire, and other counties. Limes of the latter kind, as we have stated above, owe their hydraulicity chiefly to the chemical union of the lime and magnesia on the addition of water. They frequently attain considerable strength, but the author is not aware of any actual tests having been carried out to show the difference between them and other hydraulic limes. An analysis of a good hydraulic lime, obtained from a magnesian

limestone near Doncaster, in Yorkshire, will be given in the table of analyses in the next article.

GENERAL BUILDING NEWS.

MANCHESTER CATHEDRAL RESTORATION.—What is assumed to be the finishing stroke of the present restoration of Manchester Cathedral,—which has now been going on for some twelve years or more under the direction of the architect, Mr. Crowther, —has been commenced. This is the taking up of the entire flooring in the south aisle of the nave, forming what are known as the Trafford Chapel and Brown's Chapel. The flooring is not only being taken up, but is being lowered to the same level as the floor of the nave. This is preparatory to the proposed scheme of relaying the whole of the floor of the nave in diamond-shaped blocks of black and white marble. By the time this work is completed on the south side of the nave, it is anticipated that the new south porch and baptistry will also be completed, and the former south entrance, which has been closed for a considerable time, will be once more utilised.

CLOCK-TOWER, KEIGHLEY. — This town being without a reliable public clock, some of the leading inhabitants undertook to supply this want, and sent circulars to the Governors of the Keighley Institute and others in furtherance of the above project, when Mr. Prince Smith, one of the life members of the Institute, undertook to raise the tower so as to afford space for four large illuminated dials, and for the clock, chimes, and five large bells and hour bell at his own cost, and in memory of the late Mr. Prince Smith, senr., his father. The governors having accepted this gift, Mr. Prince Smith gave instructions to Messrs. Mawson & Hudson, architects, to prepare plans for the necessary alterations, which have now just been completed, the masonry having been done by Mr. M. Booth, and the joiner work by Mr. Thos. Smith, Keighley. The order for the clock and chimes and bells was given to Messrs. Wm. Potts & Sons. The clock shows the time upon four 6 ft. illuminated dials, and strikes the hours and St. Mary of Cambridge chimes upon 3 tons of bell metal.

ALTERATIONS TO HADDINGTON ABBEY.—On the 30th ult., Haddington Abbey, which for the past nine months has been undergoing renovation, was re-opened. The alterations have been carried out at a cost of over £5,000. The architects were Messrs. Hay & Henderson, Edinburgh. An organ is being erected at a cost of 1,000*l.*

WESLEYAN CHAPEL, CROSSGATES, NEAR LEEDS. —On the 2nd inst., the foundation-stones of a new chapel for Crossgates were laid. When completed, the new buildings will consist of a chapel providing sitting accommodation for 400 on the ground floor, and 100 in an end gallery, with vestry, &c.; but for the present only about three-fifths of the entire length is being erected, to accommodate about 300 on the ground floor. The buildings are being erected from the design and under the superintendence of Mr. Geo. F. Danby, architect, of Leeds. They are to be in the Decorated Gothic style, and built of pressed bricks with stone dressings. The width of the chapel will be 40 ft., and the length 60 ft., with open timbered roof, rising to a height of 32 ft. in the centre. The internal wood work will be of pitch pine and varnished. Mr. Paul Rhodes (mason and bricklayer), and Mr. T. Harrod (joiner) have the work of erection in hand. The estimated cost of the new building is 1,100*l.*

NEW CHURCH, GREAT CROSBY.—On the 25th ult. Bishop O'Reilly laid the foundation-stone of the new church and presbytery of SS. Peter and Paul, Liverpool-road, Great Crosby. The cost of the building will be 6,600*l.* The new building, the architects of which are Messrs. Sinnott, Sinnott, & Powell, Liverpool, will contain 500 sittings. The contractor for the building is Mr. Samuel Webster, Bootle.

PUBLIC BATHS AND TECHNICAL SCHOOL FOR BATLEY.—The memorial-stones of the Public Baths and Technical School now in course of erection at Batley were laid on the 2nd inst. The public baths are situated between Cambridge-street and Wellington-street, and the dimensions are to be 134 ft. by 126 ft. The walls externally will be of Delph stone, lined with white, brown, yellow, and black glazed bricks. The first-class swimming-bath will be 75 ft. 6 in. in length and 33 ft. 6 in. broad. A second-class swimming-bath will be 85 ft. by 45 ft. There are to be 20 slipper-baths, which will be divided into first and second class. Rooms are to be reserved for Turkish baths. The entrance to the building is to be from Cambridge-street, and over this will be the caretaker's house. The cost of the baths is estimated at about 8,000*l.* The plans have been prepared by Mr. W. Hanstock, of Batley. Messrs. T. Bradford & Co., of Manchester, and Messrs. J. Bagshaw & Co., of Batley, are the engineers engaged. The mason's work is being done by Mr. Isaac Nelson, and the joiner's work by Mr. Henry Brooke. Mr. Joseph Hepworth is clerk of works. The site of the technical school is opposite that of the baths. The building will be three stories high, and will accommodate about 300 students. The design now being carried out is only half of what it is suggested the structure shall ultimately be. It is arranged so as to allow for the duplication of the building now in course of erection at some future time. In accordance with the regulations of the Science and Art Department, there will be lecture-rooms, a chemical laboratory, and other necessary departments. The structure, exclusive of fittings, will cost about 3,500*l.*

ADDITIONS TO THE PARISH CHURCH, HAYDOCK, LANCASHIRE. — The new portion of the Parish Church of St. James, Haydock, and the annexe to the graveyard adjoining, were recently consecrated by the Bishop of Liverpool. The new erection, which has now been completed from plans of Messrs. Douglas & Fordham, of Chester, includes a chancel, organ chamber, and side aisles, and is capable of seating over 600. The total cost of the building, inclusive of the organ and wall round the graveyard, is 4,743*l.* 18s. 6d.

NEW MILITARY CHURCH, ALDERSHOT. — Her Majesty the Queen laid the foundation-stone of the new military church, Stanhope Lines, South Camp, Aldershot, on the 27th ult. The building is of Early English design; the walls being in red bricks, and the dressings in St. Aldhelm Box Ground stone, from the quarries of the Bath Stone Firms, Limited, Bath. The contract is being carried out by Messrs. J. Dorey & Co., of Brentford, under the superintendence of Colonel Waller, Major Pitt, and Lieutenant Michie. When finished it will have a length of 169 ft., and a width of 64 ft., and is calculated to seat 1,012 people.

THE PROPOSED EXTENSION OF THE STOCKPORT WORKHOUSE.—The Stockport Board of Guardians received on the 27th ult. a letter from the Local Government Board with reference to the scheme formulated by the guardians for the extension of the Stockport Union Workhouse. The letter stated that the Board were advised by their inspector and architect that the plans were very unsatisfactory in principle, and notwithstanding the large expense—estimated as at least 15,000*l.*—afforded practically no increase of accommodation for the sick, and left the domestic and administrative departments of the workhouse untouched, except as regarded the laundry offices, which, under the new scheme, would be scattered and inconvenient. Moreover, the plans did not show any improvement or increase in the accommodation for the able-bodied and infirm men, nor any improved classification amongst the men and boys. Those very serious defects in the plans appeared to the Local Government Board such as to require that they should be carefully reconsidered, and it seemed to them that, as under the scheme proposed, practically the entire area of the premises would be absorbed, while the amount of accommodation afforded would, as they were advised, be inadequate for the wants of the union as at present constituted, it would clearly be inexpedient to spend the large outlay that would be involved upon the present site, and then find it necessary at a later date to obtain an additional site elsewhere. For the works contemplated, moreover, a loan for the full period of thirty years would not be allowed, and the money borrowed would have to be repaid in fifteen years, or part in ten and part in twenty years. The cost would then fall more heavily on the rates for the next few years than if a more comprehensive and satisfactory scheme were adopted, under which the cost of land and structure might be defrayed by a loan repayable in the full period of thirty years.—The Guardians resolved to refer the report to the House Committee. The architect of the Local Government Board some time ago recommended the erection of a new workhouse at a cost of about 50,000*l.*—*Manchester Courier.*

FRANCISCAN CHURCH, CHILWORTH, SURREY.— On the 23rd ult. the new Catholic church and Friary recently erected on Blackheath, Chilworth, were opened. The building is in the Late Perpendicular style. It is constructed of Ewhurst stone, with Chilworth stone facings, and the internal woodwork is of oak and Oregon pine. In addition to the high altar there are four side altars, which are chiefly of alabaster. There is accommodation in the Friary for about twenty-six members of the Order. The architect was Mr. Walters, of Westminster, and the contractors Messrs. Longley & Sons, of Crawley.

WESLEYAN CHAPEL FOR TAIBACH, GLAMORGAN. —On the 23rd ult. foundation-stones of a new Wesleyan Chapel at Taibach were laid. The contractor's estimate for the work is 1,459*l.* The building will measure 44 ft. 3 in. by 33 ft. 8 in. A gallery will be fixed on either side and at each end, the front gallery to be used as an organ and choir chamber. The architect is Mr. John Wills, and the contractors Messrs. D. C. Jones & Co., Gloucester.

WESLEYAN CHAPEL, NEW FERRY, CHESHIRE.— A new Wesleyan chapel was opened on the 14th ult., at New Ferry, by the Rev. T. B. Stephenson. The chapel has accommodation provided on the ground floor for about 520 in nave, transepts, and chancel. Two main entrances have been arranged, one by the octagon porch, to the left, and the other by the tower porch to the right. The chancel is fitted with side pulpit, provision being made for communion-table, &c., on a raised platform. A minister's vestry, with lavatory accommodation, has been provided. The scheme includes future school buildings at the rear, with accommodation for about 450 children in school and class-rooms. The internal woodwork and fittings are of pitch-pine varnished, and the external woodwork of red pine. The heating is by hot-water pipes, and the ventilation by means of patent ridge tiling. The windows are fitted with lead cathedral lights. A large traceried window has been designed in the front gable, and all the chapel windows have enriched tracery heads. The whole of the buildings, except rear elevation, are faced with red sandstone from Helsby, and the window and door dressings, &c., are of Runcorn stone. The roofs are slated in alternate red and blue bands. The contract for the chapel portion of the scheme has been carried out by Messrs. Kelly Bros., of Walton, for the sum of 2,275*l.*, from the designs and under the superintendence of Mr. Thomas W. Cubbon, architect, of Birkenhead, whose plans were selected in a limited competition. The masonry has been executed by Mr. Hobson, of Liverpool; the glazing by Messrs. Wilkinson; and the plumbing by Mr. John Powell.

NEW CHURCH AT CUDWORTH, YORKSHIRE.— The corner-stone of a new church was laid on the 24th ult. at Cudworth, by Miss Edith Guest, of Barnsley. The church, which is to accommodate 250 worshippers, is to be in the Early Decorated style, from designs by Messrs. Smith & Brodrick, of Goole and Hull. The total cost of the church will probably be about 2,600*l.* The contract has been let for 2,340*l.*, to Messrs. Benj. Graham & Sons, Huddersfield.

CATHOLIC SCHOOLS, PENZANCE.—On the 20th ult. the Rev. C. Graham, Bishop-Coadjutor of the diocese, laid the corner-stone of a new elementary mixed school at Penzance, to accommodate 100 children. The school will contain one large room, with class-rooms and the usual offices. Mr. O. Caldwell is the architect, and Messrs. A. Trythall and W. H. Trounson are the contractors. The cost of the school will be about 1,000*l.*

NEW CHURCH, HIGHTOWN, LIVERSEDGE, YORKSHIRE.—On the 11th ult. Mr. Walter Freeman, of Knaresborough, laid the corner-stone of a new church at Hightown, Liversedge. The building, with necessary furniture, is to cost about 4,500*l.* The plans are by Mr. W. S. Barber, of Halifax, and the style is Early English. A tower and spire are shown, but these are not to be built at present. The nave and aisles will be 50 ft. by 20 ft. and 9 ft. 6 in. respectively, and chancel 28 ft. 6 in., by 20 ft., with organ-chamber and vestries, and the building will seat 380 people. Messrs. W. & J. Milner, of Mirfield, are the contractors.

FOREIGN AND COLONIAL.

FRANCE.—The demolition of the ruins of the Palace of St. Cloud is shortly to be proceeded with. It is necessary, as they are quite dangerous to pedestrians.——Meissonier's country house at Poissy is to be sold in a few days. It contains many of his paintings, some of them very interesting.——The Compagnie des Chemins de Fer de l'Est have just commenced working the new strategical line from Brie-comte-Robert to Verneuil, in the continuation of the line from Paris to Vincennes and Jourville.——The new railway from Thiviers to Noutron has just been opened.—— The clock-tower of the church of Remorantin has been destroyed by lightning.——A rich amateur has just left an interesting collection of books and works of art to the museum and library of Montpellier.——A committee has been formed at St. Malo to erect a statue in one of the squares of the town, to the French navigator Surcouf.——The archæological congress has finished its work at Orleans. The congress next year will be held at Abbeville.——A committee has been formed at Bourg-Saint-Andéol (Ardèche) with a view to raise a monument to the republican deputy Madier de Mortjan, who has recently died.——Next month the bronze statue of Eugène Pelletan, the writer, will be inaugurated at Royau; it is the work of M. Aubé, and was in the Champs Elysées Salon this year.——The monument to Clement Marot which was inaugurated at Cahors on Sunday last has been constructed from the designs of M. Rodolosse, architect. The sculptured portions have been done by MM. Turcan and Puech, and M. Olivier Merson has designed the mosaic decoration. The whole thing is in the Renaissance style; in the centre is the bust of the poet surrounded by pilasters, supporting a sheild bearing the arms of Cahors; the base is ornamented by a bas-relief in marble.——There has just been a solemn unveiling of the statue of Joan of Arc at Rouen. This remarkable monument has been made from the designs of M. Juste Lisch, the Inspector-General of Historical Monuments. The statue of Joan of Arc is the work of M. Ernest Barrias, who has made the heroine standing, with chained hands, bare head, and short hair, just as she must have appeared at the moment of her execution. This statue was in this year's Salon.——The Historical and Archæological Society of Maine have taken possession of the celebrated house known as Queen

Berengaria's, which a rich inhabitant of Mans had bought and restored at his own expense for the Society. This house, which is also known as the "House of the White Queen," dates from the time of Charles VIII. or Louis XII.——There is to be an international exhibition of fine arts held at Monaco, in a special pavilion, from November 15 till April 15, 1893.——The new Town-hall of the Eighteenth Arrondissement, built by M. Varcollier, and which will replace that of St. Euphrasie at Montmartre, will be opened on the 17th inst. The new hospital Debrousse, at Paris, is also to be opened soon.——The committee formed to erect a monument to Alphand has given M. Formigé the commission for the plan, and has also instituted a sort of limited competition amongst the sculptors. M. Garnier has suggested placing the monument at the entrance to the Avenue of the Bois de Boulogne. ——At the end of the Congress visit to the Palais de Justice most of those present signed an address to M. Coquart, expressing their admiration of his work in the great room of the Court of Appeal.

MISCELLANEOUS.

LINCOLNSHIRE AND NOTTS ARCHITECTURAL SOCIETY.—The annual excursion of the Architectural and Archæological Society of the Counties of Lincoln and Nottingham took place on the 22nd and 23rd ult. The Rev. Arthur Sutton, of Brant Broughton, is the hon. General Secretary of the Society, and the Rev. H. J. Cheales, Vicar of Friskney, acted as the hon. Local Secretary. There were about thirty-five ladies and gentlemen in the party on the first day, and on the second day there were nearly fifty. The Rev. Precentor Venables, of Lincoln, accompanied the party, and gave interesting descriptions of the various churches visited. The headquarters of the excursion were at Skegness. On the first day the party visited the following villages:—Winthorpe, Ingoldmells, and Addlethorpe (the church of which is half-a-mile inland, and is Perpendicular, somewhat of the Suffolk type. It resembles Ingoldmells in having been lopped of its chancel in 1706, but has been more fortunate than its neighbour in preserving its fine woodwork. The porch has a parapet of twining branches and a crucifix on the apex with figures of angels on the angle buttresses. Inside, the porch resembles that of Winthorpe. The door is partly of old woodwork. On the north side of the church are six buttresses with grotesque figures bearing scrolls on which are inscriptions now scarcely legible. The nave is of five bays with light octagonal pillars). The party also visited Burgh, Gunby, Spilsby, Halton Holegate, Bratoft (the church of which has recently been restored by Mr. James Fowler, of Louth), Thorpe St. Peters, and Croft All Saints. The excursionists then returned to Skegness, where the annual dinner took place, after which a meeting was held and a paper read by the Rev. H. J. Cheales, on "The Mural Paintings in Friskney Church." On the second day of the excursion (Thursday), the party drove to Wainfleet, and inspected the Magdalen College School. They then visited Friskney All Saints, Wrangle, Leake, Leverton, Benington All Saints, Butterwick, Freiston, and Fishtoft. Skirbeck Church was also visited, and the company then proceeded to Boston and dispersed.

SOCIETY FOR THE PROTECTION OF ANCIENT BUILDINGS.—The fifteenth annual meeting of the Society for the Protection of Ancient Buildings was held last week in the old hall of Barnard's Inn, Holborn. His Honour Judge Lushington presided, and in the course of his address said (according to the *Times* report) that the Society was actuated by the modern historical spirit which desired to promote a care for, interest in, and study of the past, and piety towards the past. That was often done in a narrow parochial way; but it need not be so, and when they remembered all they owed to the past it was a most reasonable spirit, and quite one of the most important currents of thought in our time. Had the age in which we lived any real care for outward beauty or for the arts that echoed and illustrated that outward beauty, or for the historical associations that were often so very deeply bound up with ancient and beautiful monuments? He thought he would be a brave person who would claim praise for it in that respect. Let them think of the long lines of jerry-built houses and the loss of the race of art workmen disappearing from among us. Let any one think of the immense difficulty under which architecture, painting, and sculpture were now being carried on among us. There had been a beautiful architecture in England, and a fine race of art workmen, and a great number of churches scattered up and down the land, so that there really had been opportunity for every one to familiarise himself with beauty and dignity of work. Those churches which had been praised by the poets were the victims of our ignoble restoration.

EMIGRATION.—We have received the following circular from the "Emigrants' Information Office," 31, Broadway, Westminster, in regard to the prospects of work in different Colonies:—"In Canada there is likely to be a good demand during this quarter for farm labourers, general labourers, navvies, and for mechanics in the building trades. The Canadian Government is offering bonuses of 5 dols. to 10 dols. a head to those who take up land in the North-west or British Columbia. In New South Wales mechanics are not wanted, but in some country districts there is a demand for experienced farm and general labourers. A large number of persons have applied for work at the Government Labour Bureau at Sydney. The depression in Victoria still continues, especially in the building and kindred trades. The stoppage or completion of railway and other public works has also increased the scarcity of employment. In South Australia there are good openings for ploughmen and for married couples on stations, but the supply of labour has been quite equal to the demand. The Queensland Government withdrew their free passages last February, so that now all, except nominated and indented emigrants, have to pay full fares. There is no demand whatever for mechanics in Queensland, many carpenters, plumbers, and general labourers have been out of work, and no one, with the possible exception of a few ploughmen, should go there at present on the chance of finding employment. Western Australia still offers free and reduced passages to certain classes of emigrants; and there is a demand for a limited number of farm labourers, men in the building trades, miners, and labourers on railways and public works. In Tasmania, the silver mines at Zeehan are giving employment to considerable numbers of miners and others. In various districts of New Zealand, there is a demand for farm and station hands, and for miners; and prospects generally are good. The new Government Labour Bureau at Wellington is proving very useful, and new arrivals should apply there, or at one of its 200 country branches. Cape Colony and Natal offer reduced passages to mechanics, female servants, and others, for whom there is a limited demand. In all the above-mentioned Colonies there is a demand for small capitalists, farmers, fruit-growers, and female servants. As it is announced that a Commission has been appointed by the Brazilian Government to encourage the introduction of European agricultural labourers into some of the northern provinces of Brazil, it becomes necessary to repeat again most strongly the warnings which have been frequently issued from this office against British emigration to that country. However great may be its natural resources, is has been abundantly shown that the conditions of life are wholly unsuited to the ordinary British workman, and intending emigrants are, therefore, most earnestly cautioned not to be induced by any offer of free or assisted passage, or grant of land to go out to Brazil."

TRADE FESTIVITIES.—Some seventy employés of Mr. F. Britton, builder, Leconfield-road, N., journeyed to St. Albans last Saturday to hold their fourth annual beanfeast, Mr. Britton presiding at the dinner. The remainder of the afternoon was taken up by athletic contests, &c., and a visit to the Abbey.

MACADAMISED ROADS AND FROST.—The annual report of the Borough Engineer of West Hartlepool (Mr. J. W. Brown) contains the following note on the behaviour of macadamised roads under the influence of intermittent frost:—"The past winter has been one of the most severe known to me for macadamised roads. No sooner had they been somewhat consolidated than a succeeding frost completely destroyed the surface, and this was repeated almost daily for some months. The streets most affected by the frost are those whose foundations were made with marl (or soft limestone). Being very absorbent, it became thoroughly saturated during the rains, and when in this condition the frost expands the material, and so renders the surface almost that of a ploughed field."

THE ENGLISH IRON TRADE.—There is still but little alteration in the condition of the English iron market. Trade in all branches is quiet. The Cleveland Ironmasters' Association returns for June show that seventy-six furnaces are now in blast in that district, against three in May, and that the production of pig-iron has risen from 6,124 tons to 57,765 tons. A welcome diminution of stocks to the extent of 39,491 tons is also recorded. No. 3 Cleveland pig is now down to 40s. per ton. In manufactured iron and steel there is little doing; but late rates are fairly well maintained. In tinplates there is less inquiry. Shipbuilders, on the whole, are only moderately employed, and in the majority of engineering establishments slackness prevails. The coal trade generally is less active.—*Iron.*

MUNICIPAL WORKS AT SCARBOROUGH.—Owing to great demands on our space this week, we are again obliged to hold over our report of the recent meeting of the Incorporated Association of Municipal and County Engineers at Scarborough.

CAPITAL AND LABOUR.

THE DISPUTE IN THE SHEFFIELD BUILDING TRADE. — According to the *Sheffield Daily Telegraph*, the dispute in the building trade in Sheffield is at an end, and the masons affected have resumed work. The difficulty was brought about by the masons asking the employers to sign a code of rules. On meeting with a refusal to do this they struck work. The Master Builders' Association offered to refer the matter to arbitration, but the men declined to entertain the proposal. It is stated that work was offered the men by those builders in the town who are not members of the association, and who were willing to sign the rules. The associated employers have since followed their example in the latter respect, and affixed their signatures to the rules, thus bringing the strike to an end.

MEETINGS.

SATURDAY, JULY 9.

Architectural Association.—Visit to Colonel North's House at Eltham, and to Eltham Palace. Train leaves Cannon-street at 1.45 p.m.

St. Paul's Ecclesiological Society. — Visit to Canterbury. Train leaves Victoria at 10 a.m.

MONDAY, JULY 11.

Royal Institute of British Architects. — Adjourned General Meeting (Business), for members only. 8 p.m.

Clerks of Works' Association (Carpenters' Hall).—Monthly meeting. 8 p.m.

TUESDAY, JULY 12.

Glasgow Architectural Association.—Visit to Annfield School, Cubie-street, Mr. J. L. Cowan, architect. 6 p.m.

WEDNESDAY, JULY 13.

Toynbee Hall.—Mr. T. G. Jackson, A.R.A., on "The Architecture of the Fifteenth Century." 8 p.m.

SATURDAY, JULY 16.

Liverpool Engineering Society.—Visit to the Liverpool Corporation Refuse Destructor and the Liverpool Cold Storage Company's Works.

Edinburgh Architectural Association.—The Sketching Class to meet at Royston House, Carolina Park, Granton, to make measured drawings and sketches of the south front of the mansion. 3 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JUNE 27.—By *Wagstaff & Warman*: 9, Aberdeen-pk., Highbury, u.t. 58 yrs., g.r. 14*l.*, 1,140*l.*—By *Sherrin & Coltman*: 250, Harrow-rd., Paddington, u.t. 52 yrs., g.r. 5*l.*, r. 85*l.*, 1,040*l*; 29, Westbourne-ter. North, u.t. 58 yrs., g.r. 12*l.*, r. 75*l.*, 820*l*; 231, New North-rd., Islington, u.t. 35 yrs., g.r. 6*l.* 6s., 200*l.*—By *Chesterton & Sons*: 228, Goldhawk-rd., Shepherd's Bush, u.t. 71 yrs, g.r. 7*l.*, r. 60*l*, 510*l.*; 39, St. Mary Abbott's-ter., Kensington, u.t. 12 yrs, g.r. 10*l*, r. 85*l.*, 520*l.*; 7, Napier-rd., u.t. 58 yrs, g.r. 8*l.*, r. 62*l.* 10s., 510*l.*; the lease of 43, Euston-rd., St. Pancras, u.t. 14 yrs., 220*l.*—By *J. A. Lumley & Co.*: 1, 2, and 7, Stamford-grove East, Clapton, f., r. 89*l*, 1,140*l.*; 5, Stamford-grove West, f., and small part l., 450*l*; f. land, 13a. 2r. 38p., near Wonersh, 810*l.*; "Chinthurst Villa," and 9a. 1r. 0p., f., 1,100*l.*—By *G. Kendall*: 1 and 2, Gubbins-lane, Harold Wood, f., r. 43*l*, 450*l.*; 45 to 51 odd, East Ferry-rd., Cubitt Town, u.t. 64 yrs., g.r. 12*l.*, 450*l.*

JUNE 28.—By *G. Stockings*: 39 St. Mark's-rd., Notting-hill, u.t, 69 yrs., g.r. 6*l.*, r. 38*l.*, 265*l.*—By *C. B. Smith & Hall*: The Portsmouth, Fratton, and Southsea Tramways Company, with plant and goodwill, 6,550*l.*—By *Deverell & Co.*: Nos. 361 and 363, Harrow-rd., u.t. 90 yrs., g.r. 34*l.*, r. 246*l.*, 2,475*l.*—By *T. G. Wharton*: f.g.r. of 24*l.*, Stroma-ter., Stamford-hill, reversion in 94 yrs., 530*l.*; f.g.r. of 32*l.*, Netherton-rd., Seven Sisters-rd., reversion in 84 yrs., 640*l.*; f.g.r. of 14*l.*, Fladbury-rd., reversion in 84 yrs., 290*l.*—By *Higgins & Son*; 14 to 20 even, and 23, Carlton-hill, St. John's-wood, ut. 45 yrs., g.r. 60*l*, 3,125*l.*; 76, St. John's-wood-ter., u.t. 42 yrs., g.r. 18*l.*, r. 50*l.*, 285*l.*—By *Debenham, Tewson, & Co.*: "The Elms" and 6 acres, Roehampton, f., 13,000*l.*; 61, 62, and 63, Queen's-rd., St. John's-wood, f., r. 255*l.*, 4,140*l*; enclosures of land, Mayfield, Sussex, 53a. 2r. 9p., f., 1,240*l.*; "The Argoed Estate," Monmouth—"The Upper Gocket Farm," 60a. 3r. 34p., f., r. 30*l.*, 700*l.* — By *Driver & Co.*: 20, Redfield-lane, Kensington, u.t. 79 yrs., g.r. 7*l*, 1,550*l.* — By *W. & F. Houghton*: F. house and ground, High-rd., Leyton, 600*l.*; "Higham-hill Tavern," Walthamstow, and 4a. 1r. 31p., f., 760*l.*—By *Dyer, Son, & Hilton*: 67 and 69, London-st., Greenwich, f., r. 95*l*, 1,255*l.*; 1, Royal-hill, f., r. 20*l.*, 230*l.*; 22, Guildford-rd., u.t. 34 yrs., g.r. 4*l.*, 150*l.*—By *Messrs. Cobb* (at Rochester): "Clinch-st. Farm," High Halstow, Kent, 49a., 1r. 27p., f., r. 54*l.*, and f. marsh land, 29a. 3r. 37p., r. 33*l.*, 1,700*l.*; an enclosure of f. land, 2a. 0r. 20p., 80*l.*; four freehold cottages, Shorne, r. 41*l.* 12s., 525*l.*; six freehold cottages and a shop, Higham, 1,085*l.*; an enclosure of f. land, High Halstow, 7a. 2r. 0p., r. 7*l.* 10s., 175*l.*; two freehold cottages with gardens, r. 10*l.*, 155*l.*; enclosures, pasture and woodland, 48a. 1r. 3p., 480*l.*; enclosures of land, 7a. 1r. 1p., 175*l.*

JUNE 29.—By *A. Richards*: A plot of land, Church-st., Edmonton, 1a. 2r. 30p., f., 1,560*l.*—By *Fields & Sons*: 19 and 21, Acorn-st., Camberwell, f., 285*l.*—By *Inman & Co.*: 39 and 41, Chichester-rd., Kilburn, u.t. 65 yrs., g.r. 15*l.*, r. 80*l*, 650*l.*—By *F. E. Eiloart*: 56 to 58 even, Dalyell-rd., Stockwell, u.t. 72 yrs., g.r 26*l.* 5s., r. 140*l.*, 1,005*l.*; 64, 78, 114, 118, 122, 126, and 136, Dalyell-rd., u.t. 72 yrs., g.r. 4*l.* 3s., r. 208*l.*, 1,610*l.*; 82 and 84, Clifton-cres., Old Kent-rd., u.t. 89 yrs., g.r. 10*l.*, r. 72*l.* 16s., 595*l.*; 58, 60, and 62, Danby-st., Peckham, u.t. 83 yrs., g.r. 13*l.* 10s, r. 78*l.*, 650*l.*; 3, Wroxton-rd., u.t. 84 yrs., g.r. 5*l.*, r. 33*l.* 16s., 225*l.*; 8 to 13, Burchell-rd., Camberwell, u.t. 76 yrs., g.r. 22*l.* 10s., r. 198*l.* 18s., 1,210*l.*; 50 to 56 even, Burchell-rd., u.t. 76 yrs., g.r. 16*l.*, r. 132*l.* 11s. 4d., 835*l.*; 2 to 12 even, Cossall-st., u.t. 76 yrs., g.r. 24*l.*, r. 201*l.* 10s., 1,240*l.*; 14 to 22 even, Cossall-st., u.t., 76 yrs., g.r. 20*l.*, r. 168*l.* 8s., 1,050*l.* *F. Jolly & Co.*: 4 and 5, Cambridge-buildings, Bethnal Green, u.t. 67 yrs., g.r. 6*l*, 1,060*l.*; 4, Laura-cottages, Leyton, u.t. 81 yrs., g.r. 4*l.* 10s, 200*l.*;

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premium.	Designs to be delivered.
*New Chapel, Grays Inn	The Benchers	.....	July 21
*New Market	Pontypool Loc. Bd.	60*l.*	Aug. 1
*Municipal Technical and Art School	Accrington T. C.	50*l.* 25*l.* and 10*l.*	Aug. 15
*Garden Pavilion in Pleasure Gardens	Bournemouth Corp.	50*l.*	Oct. 15

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Limestone Road Metal	Pontypridd High. Bd.	J. Griffiths	July 12
Farm Buildings, near Forres, N.B.	.....	A. & W. Reid	do.
*Cottage, &c. Lossiemouth, Elgin, N.B.	Mr. Findlay	.....	do.
Banking Premises, Residence, and Shops, Keighley	Bradford Old Bank, Lim.	W. & J. B. Bailey	do.
*Broken Granite	Willesden Local Board	O. Claude Robson	do.
*Pipe Sewer, &c.	do.	do.	do.
*Oak Cleft Fencing	Barking Town L. B.	C. J. Dawson	do.
*Granite Kerb	do.	do.	do.
*Tarpaving	do.	do.	do.
*Stoneware Sewers and Drains, &c.	do.	do.	do.
Renovation of Christ Church, Devonport	Committee	W. H. Tozer	July 13
Extension of School Buildings	Hedworth, Monkton, and Jarrow U. D. Sch. Bd.	*Official*	July 14
*Alterations, &c. to Water Softener	St. Saviour's Union	R. von Lengerke	do.
*Oil Gas Works, Leeds, Manningham, and Birmingham	M. R. Co.	*Official*	do.
*New Station, West Bridge, Leicester	do.	do.	do.
*Painting and Repairs to Workhouse, &c.	Parish of St. George-in-the-East	Wilson, Son, & Aldwinckle	July 15
Additions to Police Station, &c. Jarrow	Durham C. C.	W. Crozier	do.
*Coal and Coke Store, at Hospital, Winchmore-hill	Met. Asylums Board	*Official*	do.
*Tar Paving Works, at Hospital, Winchmore-hill	do.	do.	do.
*New School, near Rotherham	Denaby Main Colliery Co. Lim.	do.	do.
*Reconstruction in Ironwork of Viaduct over River Gwendreath	G. W. R. Co.	do.	do.
Twenty-five Houses, Canton, Cardiff	Proprietor	.....	July 16
Business Premises, Launceston	Treleaven & Son	O. B. Peter	do.
*Stoneware Pipe Sewer, &c.	Folkestone Corp.	J. White	do.
School Buildings House, &c. Garn, Blaenavon	Llanfoist School Bd.	E. A. Lansdowne	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered
*Park-keeper's Cottage	Hornsey Local Board	T. de Courcy Meade	July 18
*Painting, &c. Darenth Schools	Met Asylums Board	A. & C. Harston	do.
*Brick Sewer	Paddington Vestry	*Official*	do.
*Making-up Road	Bromley Local Board	do.	July 19
*Sewerage Works	London County Council	do.	do.
Restoration, &c. of Church, Wetton Ashbourn, Leek	Vicar	W. Sugden & Son	do.
Main Drainage Works	Plymouth Corp.	*Official*	do.
*Paving Public Streets	Leyton Local Board	W. Dawson	do.
*Paving Private Streets	do.	do.	do.
Manse and Offices, Aberlour, Elgin, N.B.	.....	C. C. Doig	July 20
*Paving, &c. Works	Strand Bd. of Works	*Official*	do.
School Buildings, Wellington	Hanley (Staffs.) Sch. Bd.	E. E. Scrivener	do.
*Making-up Road	Fulham Vestry	W. Sykes	do.
*Boundary Wall at Recreation Ground	do.	J. P. Norrington	do.
*Wood Paving Works	Westminster Vestry	G. R. W. Wheeler	do.
Road Metal (5,000 tons)	Ystradyfodwg Loc. Bd.	J. W. Jones	July 21
*Storm Water Outfall Culverts, &c.	Leicester Corp.	E. G. Mawbey	do.
Free Library, School, &c.	Nelson Corp.	Holtom & Fox	July 22
Sewage Works (Contract No. 9)	Keighley Corp.	W. H. Hopkinson	do.
*Postal Sorting Office, Hammersmith	H. M. Works	*Official*	July 25
Business Premises, Carlisle	Mr. Proudfoot	T. Taylor Scott	No date.
Two Through Houses, Leeds	Wm. Byrom	F. W. Rhodes	do.
Steam Laundry, Gosforth, Newcastle-on-Tyne	Jesmond & Gosforth Laundry Co. Lim.	Oliver & Leeson	do.
Shop and Premises, Tredegar, Mon.	Thos. Price	.....	do.
Saleshops, Stores, &c. Craven-road, Darnall	Brightside & Carbrook Co-op. Soc. Ltd.	Henry Webster	do.
Schools, St. Ann's	Rotherham Sch. Bd.	H. L. Tacon	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Clerk of Works	Goole Sch. Bd.	2*l.* 10s.	July 12
*Assistant (Surveyor's Department)	St. Leonard's, Shoreditch	2*l.* 2s.	July 19
*Surveyor's Assistant	Wallasey Loc. Bd.	100*l.*	July 21
*Engineer	L.C.C. Asy. Com.	400*l.*	July 22
*Surveyor	Wandsworth B. of W.	300*l.* rising to 450*l.*	July 26
*Smoke Inspector	Lambeth Vestry	120*l.*	do.
*Surveyor	Condover High. Bd.	150*l.*	Aug. 1
*Borough Surveyor's Assistant	Richmond (Surrey) Cp.	2*l.* 2s. per week.	No date

Those marked with an Asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv., vi., viii., & ix. *Public Appointments, p.* xx.

73 and 75, Exmouth-st., Stepney, u.t. 20 yrs., no g.r. 325*l.*; 114, Sidney-st., Mile End, u.t. 6 yrs., g r. 4*l.*, r. 32*l.*, 60*l.*; 34, Manilla-st., Millwall, f., r. 13*l.*, 80*l.*; i.g.r. of 35*l.*, Donald-st., Bromley-by-Bow, u.t. 50 yrs., g r. 28*l.*, 95*l*; 51 to 57 odd, Ashton-st., Limehouse, c., 700*l.* By *Sedgwick, Son, & Weall*: "Warwick House," Langley-rd., Watford, f., 2,450*l*; a freehold cottage, Shenley, Herts., r. 10*l.*, 155*l.* By *Protheroe & Morris*: "The Clyde," Kingston-rd., Malden. f., 1,335*l.*; "Park-villa," Hainault-rd., Leytonstone, f., 600*l*; 3 and 4. Essex-villas, f., r. 78*l*, 1,205. By *R. Tidey & Son*: 33, Oakfield-rd., Clapton, u.t. 75 yrs., g r. 6*l.*, 35*0l.*; 87 and 89, De Beauvoir-rd., Kingsland, u t. 25 yrs., g.r. 9*l.*, r. 50*l*, 250*l.*

JUNE 30.—By *Watson & Co*: 11, 12, and 13, Roman-rd., Barnsbury, u.t. 55 yrs., g.r. 32*l.*, r. 111*l.*, 710*l*; 407 and 409, Goldhawk-rd., Hammersmith, u.t. 29 yrs., g.r. 20*l.*, r. 66*l.*, 500*l.*; I.g.r. of 68*l.*, Shepperton-rd., Islington, g.r. 14*l.*, u.t. 31 yrs., 680*l.*; I.g.r. of 60*l.*, Hereford-st., Euston-rd., u.t. 28 yrs, g.r. 24*l.*, 580*l.*; i.g.r. of 9*l.* 10s., Dunn-st., Kingsland, u.t 21 yrs., g.r. 4*l.*, 75*l.*—By *Beadel & Co*: "The Hutton Hall Estate" of 1,133 acres, Essex, fourteen freehold cottages, 1,060*l.*; "Chequer's Farm" and 135a 2r. 12p., f., 4,700*l.*; an enclosure of land, 1a. 3r. 7p, f., 210*l.*; two enclosures of land, 25a. 2r. 0p., f., 1,400*l.*—By *Boyce & Evans*: f g.r. of 63*l.*, Sutton-pl., &c., Kingsland, reversion in 44 yrs, 1,350*l*; f.g.r. of 16*l.*, Usher-rd, Bow, ditto in 74 yrs., 385*l.*; f.g.r. of 15*l.*, Roman-rd., ditto in 34 yrs, 634*l.*; 36, 38, and 40, B leyn-rd, Kingsland, f, r. 49*l.* 8s., 330*l.*; 104, 106, and 108, Dalston-lane, u t. 59 yrs., g.r. 18*l*, r. 114*l.*, 1,120*l.*—By *Stimson & Sons*: f.g.r. of 100*l.*, Newrd., Bermondsey, reversion in 36 yrs., 2,450*l.*; Nos. 274 and 67, Duke st., Waterloo-rd., f., r. 57*l.* 4s., 300*l.*; 25 to 51 odd, Addey-st., Deptford, u.t. 29 yrs., g.r. 62*l.* 10s., 255*l.*; 3, Bishop's-rd., Brixton, u.t. 69 yrs., g.r. 5*l.*, 200*l.* —By *Newbon & Co.*: I.g r of 60*l.* Rhodes-st., Barnsbury, u.t. 51 yrs., 1,060*l.*; 40, Tiber-st., King's-cross, u.t. 50 yrs., g.r. 4*l.*, 275*l.*; f. plot of land, Ferme Pk-rd., Hornsey, 850*l*; a plot of f. land, Raynes Pk., 75*l.*; 207, Junction-rd., Holloway, u t. 64 yrs., g.r. 5*l.*, 510*l.*; 51, 55, 70, 76, and 78, Westmoreland-rd., City-rd, u.t. 11 yrs., g.r 24*l.* 19s., 505*l.*—By *Glasier & Sons*: 16, Bexley-rd., Belvedere, u.t. 65 yrs., g.r. 2*l.* 14s, r. 30*l*, 380*l.*; "The Grange," and about 1 acre, f., r. 135*l.*, 2,600*l.* —By *Dyer, Son, & Hilton*: 48, Lee-pk., Blackheath, u.t. 59 yrs., g.r. 11*l.* 5s., r. 80*l.*, 800*l.*—By *Debenham, Tewson, & Co.*: 74 to 84 (even), Richmond-rd., Kingston-on-Thames, f., 6,685*l.*; "Tavistock Lodge," Tavistock-rd., Croydon, f., r. 35*l.*, 420*l.*; "Woodlea," Fairfield-rd., u.t. 41 yrs., g.r. 15*l.* 15s., 660*l.*; l.g.r. of 64*l.*, Archer-mews, Kensington, u t. 51 yrs., g r. 7s., 93*l.*; "Kettlewell Vale House," Horsell, Surrey, f., r. 85*l.*, 2,100*l.*—By *R. J. Steel*: Enclosures of f. land, Mitcham, Surrey, about 29 acres, 4,240*l.*; two f. cottages, r. 30*l.*, 425*l.*

JULY 1.—By *G. B. Smallpeice*: 179, Wardour-st., Soho, f., r. 100*l.*, 2,000*l.*—By *Jones, Lang, & Co.*: L.g.r. of 56*l.* 14s., Boston-st., Dorset-sq., u.t. 17 yrs, g.r. 18*l.* 18s., 340*l.*; I g.r. of 54*l*, Grays Inn-rd., u.t. 18 yrs., g.r. 14*l.*, 400*l.*; I.g.r. of 141*l.* 5s., Canonbury, u.t. 26 yrs., g r. 55*l.*, 1,040*l.*—By *W. Wingham*: 11, 13, and 15, Lewis-rd., Brixton, u t. 49 yrs., g.r. 12*l* 12s., 355*l.*—By *E. Owers*: F.g.r. of 40*l.*, Hampstead, reversion in 98 yrs., 1,000*l.*—By *H. C. Newson*: F.g.r. of 20*l.*, Hackney, reversion in 81 years, 455*l.*; f.g.r. of 60*l.*, Percy-ter., reversion in 76 yrs., 1,182*l.* 10s; freehold plot of ground, Gainsborough-rd., 200*l.*; 1A, 2 to 5, Gainsborough-rd., u.t. 72 yrs., g.r. 50*l.*, r. 185*l*, 1,130*l.*; 8 and 9, Upper Montagu-st., Baker-st., and 106A, Crawford-st., u.t. 11 yrs, g r. 15*l.* 15s., 760*l.*—By *Mullett, Booker, & Co.*: "Grafton Lodge," Quex-road, Hampstead, u.t. 74 yrs., g.r. 15*l*, 800*l.*; 9, 25, 28, 30, 31, 35, and 36, Nightingale-st., Lisson-grove, u.t. 30 yrs, g r. 62*l* 2s., 225*l.*; 25, Denmark-st., Soho, u.t. 32 yrs., g r. 70*l*, r. 162*l.*, 250*l.*—By *Green & Son*: Freehold land of about 9 acres, Norbury, 1,250*l.*; five plots of f. land, 565*l.*; enclosures of f. land, Billingshurst, 6a. 0r. 3p., 220*l.*; "Little Daux Farm," 31a. 3r. 1p., f., 1,400*l.*; "Five Mile Ash Farm," 67a. 3r. 26p., f., 700*l.*; "Barn House Farm," 88a. 3r. 34p., f., 850*l.*

[*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g r. for ground-rent; r. for rent; f. for freehold; c. for copyhold: l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a for per annum; yrs. for years; st. for street; rd, for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

9,216.—BRICKMAKING MACHINERY: *S. Jefferies.*—This invention relates to that form of machinery wherein bricks are made by severing them from a stream of clay advanced from a die on to a cutting-table, in connexion with which are arranged a number of cutting wires. The inventor proposes to utilise the movement of the stream of clay for setting in action the cutting mechanism, so that the intermittent operations of cutting off the bricks are effected automatically at the proper moment without attention from the men, who will have nothing to do but remove the bricks after being severed by the cutting-wires.

3,424.—NAILS: *Joseph James Macky and John Mitchell.*—The object of this invention is to provide a nail for corrugated metal, with a flexible head made of hard metal, and of such a nature that when driven it will adjust itself perfectly to the corrugations or ridges of the metal to be fixed, reducing the risk of indenting or bruising to a minimum. It consists essentially of one or more concavo convex embossed discs or washers in combination with the shank and head of ordinary nails of any suitable pattern.

7,804.—SEWER-TRAPS: *A. & A. Budde.*—Relates to traps for the entrances to drains and sewers, and its object is to prevent the exit of gas or air from the sewers without obstructing the passage through the trap. The upper or inlet part of the trap extends in the form of a tube to a short distance below the water level. Directly below the bottom of the tube is arranged a cone at a sufficient distance from the tube to allow of the passage of any solid matter which may have to pass through the trap.

7,839.—SEWERS AND DRAIN-PIPES: *S E. Babcock.*—This invention relates to a system of sewerage by which the subsoil or ground water may be safely and efficiently removed in conjunction with the ordinary sewage and by the same set of pipes, or by an improved drain-tile or hollow brick built into the walls of the main sewer, or laid independent of the same. The details of the invention can only be understood by reference to the drawings accompanying the specification.

7,850.—MORTAR: *E. T. Warner and J. F. Curry.*—This invention is concerned with the production of common mortar in contradistinction to hydraulic mortars or cements. The improvement consists, first, in mechanically mixing lime and water to produce slaked lime; secondly, in retaining in bulk the lime paste thus produced for a time sufficient to insure its slow but thorough digestion, its becoming slowly but finally cold and homogeneous, and its assuming a puttylike or plastic consistency; and thirdly, in mechanically mixing the digested lime paste with sand. The slaked lime is strained or screened to free it from core and foreign particles.

8,070.—PLANES: *J. Mitchell*—An improvement in planes, adapted for the use of carpenters and joiners, having for its object to provide a cutting-blade capable of being quickly and easily sharpened, and of being reversed when required, and constructed so that it may be used in combination with any of the old blades usually employed. The cutting-blade consists of a single thin plate of metal properly tempered and having a cutting-edge at both ends. This plate is adapted to be adjusted and reversed, and one end is provided with a slot located longitudinally at the central portion thereof, the slot being of a suitable length, and, in order that the cutting-blade may be easily reversed or adjusted between its tie-plates or blocks, the central portion of the side edge are preferably provided with serrations The cutting-blade is held between a back plate or block and a forward clamping-plate. The back plate may consist of a new or old blade of the old type, and the three parts are bound together by means of a set screw, which passes through the clamping block or plate, through the slot in the cutting-blade, and through the slot or opening usually formed in the old style of cutting-blade, or through a slot or opening in whatever form of back plate that may be employed. This invention is applicable to any style of plane.

NEW APPLICATIONS FOR LETTERS PATENT.

June 20.—11,462. H. Lockwood, Manufacture of Sewage-sludge into Bricks, Pots, Tiles, and Rain-pipes and Sanitary Ware.—11,480, W. Williams and W. Lewis, Suspender for Paint-pots, &c.—11,490, W. Steel and H. Braham, Bolts for Doors.—11,511, A. Tyler and J. de Vesian, Machines for Carving Wood, &c.—11,576, H. Bunker and W. Chapman, Door-spring.—11,520, C. Procopides, Gas Chandeliers, &c.

June 21.—11,547, J. Mackenzie, Brickmaking Machines.—11,576, T. Duggan, Automatic Disinfecting Apparatus for Water-closets.—11,593, E. Ballard, Decorative Wall-bracket Ventilator.—11,594, A. Boult, Fans and Ventilators.—11,612, J. Dales, Smoke-burning Fireplace for Houses, &c.

June 22.—11,647, B. Mountain, Pneumatic Checks and Springs for the Silent Closing of Doors, &c.—11,619, R. Wilde, Chimney-pots.—11,703, H. Newton, Automatically Opening or Closing the Doors leading to lifts or elevator openings or shafts.

June 23.—11,720, D. Curr, Chimney-tops.—11,732, W. Neilson, Bolts for Doors, &c.—11,747, J. Dobbie, Fixing Tiles to Walls, Ceilings, and other Places.—11,760, A. Shaw, Valve for Cisterns.—11,766, W. Tablot & C. Venning, Hardening and Preserving Natural and Artificial Stone and other like Building Material.

June 24.—11,811, S. Marcus and E. Bothe, Fire-grates.—11,813, S. Dix, Water-closets.—11,821, O. & H. Smith, Hinges.

June 25.—11,858, T. Downie, Window-sashes.—11,870, W. Briggs, Flushing-basin for Water-closets.—11,891, W. & C. Junge, Saws.

PROVISIONAL SPECIFICATIONS ACCEPTED.

9,908, G. Addy and W. Johnson, Self-releasing Safety Grindstone Rest.—10,031, W. Gabriel, Improved Method of Hanging Window-sashes.—10,038, B. Pitt, Open Fire-grates.—10,111, J. Williams, Caps, Pots, or Tops, for Chimneys, Ventilating Shafts, &c.—10,160, J. Baines, Artificial Stone.—10,419, F. Baker, Casement Stay and Fastener combined.—10,455, J. Gastrell, Fastening Devices for Windows and doors.—10,574, W. Maxfield, Stoves made of Dutch Tiles, &c.—10,592, M. Tayleure, Mitreing Plane or Machine.—10,813, A. Salles, Bridges.—10 815, G. Glasson, Sash Weight, and Method of Hanging Sashes.—18,918, V. Aston, Balancing Window-sashes.—10,693, J. Day, Drainage and other Socket Pipes to Facilitate Jointing.—10,991, A. Selig, Bakers' Ovens.—11,100, S Jefferies, Brick Machinery.—11,211, R. Gilson and W. Booer, Heating Bakers' Ovens with Gas.—11,241, W. Lancaster, Laying Concrete Cement and other similar materials for Footpaths, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

8,749, H. Burnett and W. Groom, Testing Drains or Soil Pipes.—8,050, O. Imray, Corrugated Sheet-metal Pipes.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	9/0/0	0,0/0
Teak, E.I.. load	9/10/0	15/0/0
Sequoia, U.S.ft.cu.	2/3	3/0
Ash, Canada load	2/10/0	4/0/0
Birch, do.	3/5/0	4/10/0
Elm, do.	3/10/0	4/15/0
Fir, Dantzic, &c.	1/10/0	3/10/0
Oak, do.	3/0/0	5/5/0
Canada.....	5/10/0	7/0/0
Pine, Canada red	2/10/0	3/10/0
Do, yellow	2/10/0	5/0/0
Lath, D'ntzic, fath	5/0/0	6/0/0
St. Petersburg	5/0/0	7/0/0
Deals, Finland		
2nd & 1st std 100	7/10/0	9/10,0
Do, 4th & 3rd..	7/0/0	8/0/0
Do. Riga	6/10/0	8/0/0
St. Petersburg,		
1st yellow ..	10/10/0	14/10/0
Do. 2nd yellow	8/0/0	9/10/0
Do. white	7/10/0	10/0/0
Swedish	7/0/0	15/0/0
White Sea ...	8/0/0	17/0/0
Canada, Pine 1st	20/0/0	26/0/0
Do. do. 2nd....	14/10/0	16/0/0
Do. do. 3rd, &c.	8/0/0	10/0/0
Do, Spruce. 1st	8/10/0	11/0/0
Do. do. 3rd &		
2nd.....	6/15/0	8/0/0
New Brunswick	7/0/0	7/10/0
Battens, all kinds	3/10/0	15/10/0
Flooring Boards,		
sq., 1 in. prep.		
1st	9/8/0	9/13.6
Do. 2nd.....	0/7/0	9/11/0
Other qualities	0/3'6	9/7/6
Cedar, Cuba ..ft.	/3½	/4½
Honduras, &c.	/3½	/4
Mahogany, Cuba,	/4½	/6½
St. Domingo,		
cargo av	/4½	2/0
Mexican do. do	/4	/5
Tobasco do. do	/5½	/7
Honduras do..	/5½	/6½
Box, Turkey ton	4/0/0	13/0/0
Rose, Rio.....	10/0/0	20/0/0
Bahia	9/0/0	18/0/0
Satin, St. Do-		
mingo ....ft.	0/0/8	0/1/3

TIMBER (*continued*).		
Satin, Porto Rico	0/0/8	0/1/6
Walnut, Italian..	0/0/3½	0/0/7
METALS.		
IRON—Pig, in Scot-		
land.....ton	2/1/3	0/0/0
Bar, Welsh, in		
London.....	5/17/6	6/0/0
Do. do. at works		
in Wales	5/7/6	5/10/0
Do. Staffordshire,		
in London	6/5/0	6/15/0
COPPER—British,		
cake and ingot	47/0/0	49/0/0
Best selected ..	49/0/0	49/10/0
Sheets, strong..	56/0/0	57/0/0
Chili, bars	44/16/3	44/17/6
YELLOW METAL lb.	0/0/5½	0/0/5¾
LEAD—Pig,		
Spanish....ton	10/8/9	10/10/0
English, com.		
brands	10/12 6	10/15/0
Sheet, English,		
3 lbs. per sq. ft.		
and upwards ..	12/0/0	0/0/0
Pipe	12/10/0	0/0/0
ZINC—English		
sheet .....ton	25/15/0	26/0/0
Vieille Mon-		
tagne.....	26/5/0	0/0/0
TIN—Straits	99/15/0	100 0/0
Australian	100/0/0	100 5 0
English Ingots.	102/0/0	102 10/0
OILS.		
Linseed .....ton	18/10/0	18/12/6
Cocoanut, Cochin	24/15/0	0/0/0
Do. Ceylon	22.0/0	0'0 0
Palm, Lagos	22/5/0	22/10/0
Rapeseed, English		
pale	24/15/0	25/0/0
Do. brown	23/0/0	23/5/0
Cottonseed ref...	19/10/0	0/0/0
Oleine	21/10/0	22/10/0
Lubricating, U.S.	4/0/0	5/0/0
Do. refined	5'10/0	12/0/0
TAR—Stockholm		
barrel	0/19/0	1/0/0
Archangel	0/12/6	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach *as not later than* 12 *noon on Thursdays.*]

ACKWORTH (Yorks).—Accepted for enlarging Rectory House, Ackworth. Mr. Wm. Watson, architect, Wakefield :—

Excavating, Brick and Stone—E. A. Elvey..... £455 0 0
Slating—C. F. Rycroft 44 0 0
Plastering—C. Driver..... 39 12 0
Carpenter and Joiner—N. Ibbottson 129 19 3
Plumbing, Glazing, &c.—S. Atkinson 120 0 0
Painting—C. Turner & Sons 10 5 0

BANGLEY (Staffordshire).—For the re-erection and enlargement of a farmhouse, at Bangley, in Staffordshire, for Mr. A. B. Foster, Canwell Hall, Tamworth. Mr. T. W. F. Newton, architect, 121, Colmore-row, Birmingham :—

S. Surman & Son ..	£1,937 0 0	Johnson	£1,595 0 0
Jones & Lloyd	1,797 0 0	Trentham*	1,589 10 0
Clarson & Son	1,790 0 0	* Accepted.	

BIRMINGHAM.—For the erection of a country house at Barntgreen, near Bromsgrove, for Mr. F. Taylor. Mr. T. W. F. Newton, architect, 121, Colmore-row, Birmingham :—

Moffatt	£1,960	Surman & Son.....	£1,693
Tilt & Weaver	1,889	Merton Hughes	1,621
Brazier	1,770	J. Webb.....	1,597
Huins & Son.....	1,730	Jones & Mason*	1,595
Gowing & Ingram	1,699	Read & Son (withdrawn)..	1,484
Marshall.....	1,697	* Accepted.	

[Architect's estimate, £1,550.]

BIRMINGHAM.—For the erection of "Pines," a summer cottage, for Mr. T. W. F. Newton, architect and surveyor, 121, Colmore-row, Birmingham :—

Huins (accepted)*..... £650 0 0

* For shell only : fittings not included.

BLACKPOOL.—Accepted for the terra-cotta work required in the erection and completion of the Blackpool Tower Buildings. Messrs. Maxwell & Tuke, architects, 29, Princess-street, Manchester :—

The Ruabon Brick and Terra Cotta Company, Ltd., Ruabon £1,572 5 4

BURY (Lancs.).—Accepted for the erection and completion of the "New Royal" Hotel. Messrs. Maxwell & Tuke, architects, 29, Princess-street, Manchester :—

Messrs. Newhouse & Wrigley, Bury £3,385 0 0

CARDIFF.—For the erection of horse-boxes, stalls, grand stands, &c., for the Committee of the Cardiff and South Wales Horse Show. Mr. W. Ware, surveyor, Cardiff :—

Cole.....	£544 2 9	F. S. Lock, Cardiff* ..	£418 15 0
		*Accepted.	

CARDIFF.—For forming, metalling, paving, kerbing, &c., several streets, for the Corporation. Mr. W. Harpur, Borough Engineer, Town-hall, Cardiff. Quantities by the Borough Engineer —

Salt-mead District (nine streets).

Richard Smith	£3,210 8 6
James Rich	3,043 11 1
Allis & Davies, Cardiff (accepted).....	2,764 4 4

Plasnewydd District (five streets).

Richard Smith, Cardiff (accepted)	£2,021 1 0
Thomas Harries.....	1,899 7 7

Pearl-place and Pearl-lane.

Richard Smith, Cardiff (accepted) £182 13 10

South Splott District (nine streets).

Richard Smith, Cardiff (accepted)	£4,437 14 0
J. C. Pearson*.....	2,763 16 6

* For two streets only.

CARLISLE.—For widening Botcherby Bridge, Botcherby, for the Cumberland County Council. Mr. G. J. Bell, County Surveyor, The Courts, Carlisle :—

James Beatty	£644 14 6
Robt. Johnston, Carlisle (accepted)	563 1 6

CHESHUNT.—For girls' school at Turnford, for Rev. F. F. Lambert. Messrs. J. E. K. and J. P. Cutts, architects :—

W. Gardener.....	£850 0	J. A. Hunt	£774 10
A. Potter.....	829 0	J. Bently.....	7?3 0
C. White.....	787 0		

ERITH.—For the erection of a new flour-mill at Erith, Kent, for Mr. S. Cannon. Mr. W. Egerton, architect, South-road, Erith. Quantities by the architect :—

R. & J. Butler	£5,258	Samuel J. Jerrard.....	£4,468
George Miles.....	4,950	G. E. Wallis & Sons	4,435
E. Parsons & Co.	4,877	Kirk & Randall, Wool-	
Thomas Boyce	4,543	wich*	4,242
	* Accepted.		

GOOLE.—For the erection of schools, house, out-offices, &c., Boothferry-roads for the School Board. Mr. William Watson, architect, Barstow-square, Wakefield :—

Wm. Nicholson & Sons.	£7,900 0	Henry Kelsey.....	£6,776 0
John Ingleson	7,144 0	J. B. Backhouse	6,295 10
John Pickard.....	7,108 0	H. Arnold & Son	6,210 0
Cross & Carter	7,000 0	Jackson Bros., Goole*..	6,140 0
H. Kilsey & Sons	6,800 0	* Accepted.	

[Twenty-six other separate trade tenders were received. The lowest aggregate amount of separate trades was £6,351. 5s. 6d.]

HARBERTON (Devon).—Accepted for alterations and repairs to the farmhouses and buildings at Lower Luscombe and Prowse's Luscombe farms, for Mr. Robert Harvey. Mr. W. M. Tollit, architect, Totnes :—

Brook & Ash, Totnes £614 0 0

HIGH WYCOMBE.—For the erection of a new boot factory for Messrs. Holloway & Co., Limited, Gordon-road, High Wycombe. Mr. Arthur Vernon, architect, 29, Cockspur-street, London, S.W. :—

Nash & Sons.....	£879	Gibson	£798
Loosley	877	Dickens, Wycombe*	790
Hunt	863	* Accepted.	

LEEDS.—For the erection of additions to a house, Oakfield-terrace, Headingley. Messrs. Hill & Son, architects, 25, Park-square, Leeds :—

Matthew Wilson, *Mason, &c.*.....	£75 0 0
J. Routh, *Joiner*.....	26 0 0
Carter & Crossland, *Plumbers*	12 4 3
W. Holdsworth, *Plasterer*	5 3 8
J. Atkinson, *Slater*	4 0 0
W. R. Tallotson, *Painter*.....	3 0 0
[All of Leeds.]	£125 7 11

LEEDS.—For the erection of new stores for the Leeds Industrial Co-operative Society, Limited :—

Slaters.—John Atkinson & Son, Whitehall-road, Leeds.....	£108 0 0
Plasterer.—John Dixon Dakin, 122, Woodhouse-street, Leeds	142 0 0
Ironwork.—C. J. Dawson, Park-road, Leeds.....	314 17 3

LEYTON.—For surface water drainage in Leyton and Leytonstone (two divisions), for the Leyton Local Board. Mr. Wm. Dawson, A.M.Inst.C.E., Engineer :—

	Leyton.	Leytonstone.	Total.
E. Wilson.....	£2,100 15 0	£8,183 17 0	£10,284 12 0
H. Drury	2,551 0 0	7,207 9 3	9,758 9 3
E. Parry	2,300 0 0	6,300 0 0	8,600 0 0
Lloyd & Powell	1,795 16 0	5,501 7 0	7,297 3 0
J. Dickson	1 686 15 6	5,073 4 6	6,760 7 0
W. Howard.....	1,740 5 4	4,799 14 4	6,540 4 8
J. Blomfield	1,588 10 6	4,857 12 9	6,450 3 3
B. Cooke	1,647 0 0	4,653 0 0	6,300 0 0
G. Bell	1,664 0 0	4,621 0 0	6,285 0 0
J. Neave	1,548 0 0	4,530 0 0	6,078 0 0
S. & E. Bentley	1,531 15 6	4,486 17 6	6,018 13 0
J. Bentley, Leicester*	1,529 0 6	4,276 11 3	5,805 11 9
J. Jackson, Leyton†	1,445 0 0	4,353 0 0	5,798 0 0

[Engineer's estimates: Leyton, £1,555; Leytonstone, £4,510; total, £6,065.]

* Accepted for Leytonstone. † Accepted for Leyton.

LONDON.—For repairing, ventilating, and decorating the Sutherland-garden's Wesleyan Chapel, Paddington. Mr. J. Wallis Chapman, architect, 11, Sutherland-avenue, W. :—

Jones & Co.....	£920 0	Foxley	£527 0
Clifton	806 0	Lovell	509 10
Martin	609 15	Martin & Co.....	490 0
Dixon & Co	606 0	Lincoln Bros.	449 0
Benjamin & Robinson ..	588 10	Robertson*	448 0
Pither	570 0	Marchant & Hurst	438 0
Jenner	549 0	* Accepted.	

LONDON.—For additions and alterations to Messrs. Boardman's premises, The Broadway, Stratford, E. Mr. Geo. Baines, architect, 4, Great Winchester-street, E.C. :—

A. Reed & Son	£1,893	R. G. Battley, 21, Old	
S. J. Scott.....	1,879	Kent-road*	£1,819
G. J. Hosking	1,847	* Accepted.	

For Shop-fronts, Revolving-shutters, &c.

R. G. Battley	£359	C. Spreckley, 8, President-	
S. J. Scott.....	357	street, Goswell-road*	£340
	* Accepted.		

LONDON.—For dividing the two large rooms of the boys' and girls' departments of the Bungalow-road School, Highgate-road, at the north-east end of the building, into three class-rooms, for the School Board for London. Mr. T. J. Bailey, Architect :—

Kirby & Chase.....	£272 0 0	McCormick & Sons ..	£235 0 0
Dearing & Son	239 0 0	Cowley & Drake*	185 0 0
Peattie & Axtell.....	237 8 0		
	* Accepted by the Works Committee.		

LONDON.—For carrying out works to the drainage, &c., at the Winstanley-road School, Battersea, for the School Board for London. Mr. T. J. Bailey, Architect :—

D. Charteris.....	£516	W. Hammond.....	£332
Lathey Bros.	348	Holloway Bros.*.....	329
	* Recommended by the Works Committee for acceptance.		

LONDON.—For providing and fixing heating apparatus on the low-pressure hot-water system (with the necessary boilers) for the new schools now in course of erection on the three undermentioned sites, for the School Board for London. Mr. T. J. Bailey, Architect :—

Grove-street Deptford.

Wontner Smith, Gray, & Co.....	£436 10	Purcell & Nobbs	£396 0
Perkins & Sons	403 0	J. & F. May	395 0
		We ham & Waters*	389 0

Bird-in-Bush-road, Peckham.

R. P. De Ridder.....	£438	Kinnell & Co.	£435
Bacon & Co.	421	W. G. Cannon.....	419
J. Fraser & Son	396	Wenham & Waters*.....	389

Faunce-street, Kennington-park.

Rosser & Russell.....	£449	W. G. Cannon.....	£410
Kinnell & Co.	435	G. Davies	410
Wontner Smith, Gray & Co.	432	Wenham & Waters*.....	389
* Recommended by the Works Committee for acceptance.			

LONDON.—Accepted for warming the new institution erected at Greenwich, for the blind of Kent :—

John Grundy £120 0 0

LONDON.—For the supply of 6,000 tons of lime, for the London County Council :—

	Per Ton.
The Eglinton Chemical Company	£1 0 0
Lee, Son, & Co.	1 0 0
J. S. Peters.....	0 19 6
Young & Son	0 18 0
P. Champion	0 17 3
Buxton Lime Firms Company	0 17 0 and 17s. 4d.
Halt & Co.	0 16 5
Peters Bros.	0 15 9
C. Christopherson & Co.	0 15 0

LONDON.—For the erection of a palm-house in Battersea Park, for the London County Council. Mr. Thomas Blashill, Architect :—

A. Dashwood & Sons	£2,222	W. H. Lascelles & Co.	£1,793
T. Potter & Sons	2,114	W. Parham	1,450
W. Harbrow.....	1,938	G. Howard	959
C. Gordon & Co.	1,850		

LONDON.—For alterations and additions to Upper Holloway Baptist Chapel, for the Rev. J. R. Wood and Committee. Mr. Frank E. Smee, architect, 12, West Smithfield, E.C. Quantities by Messrs. J. C. Goodchild & Son, 81, Finsbury-pavement :—

Colls & Sons	£2,311	H. M. Dove & Son	£2,072
Dove Bros.	2,270	Matlock Bros.	2,031
Grover & Sons	2,188	McFarlane.....	1,936
Kerry & Hollidge	2,167	McMillan & Houghton	1,510

Heating Apparatus and New Glass-rooms.

W. J. Fox £87 12 6

For Gas-fittings.

Wenham & Waters £113 10 0

Alterations to Ventilation.

British Ventilating Company £98 15 0

LONDON.—For additions to the Green School, Tottenham, N., for the Committee. Mr. E. Ernest May, architect, 9, Fenchurch-street, E.C. Quantities not supplied :—

A. Porter	£607	M. A. Humphreys & Son....	£475
J. Groves	560	H. Knight & Son (accepted)	444

LONDON.—For alterations and fittings to the "Dorset Arms, Leyton-road, Stratford, E., for Mr. H. Dawkins. Mr. Fred. A. Ashton, architect, 3, Crooked-lane, E.C. :—

Wm. Buckle.....	£700	W Watson	£593
Heaile & Farrow.....	645	F. Voller (accepted)	561

LONDON.—For re-building No. 51, Beak-street, Regent's-street. Mr. Robert Henry Kerr, architect, Berwick House, 139, Oxford-street, W. Quantities supplied :—

Phillips	£1,669	Lea Bros.	£1,286
Wilkinson	1,498	Manley & Son	1,274
Turner, McKay, & Ashpole	1,450	* Accepted.	

LONDON.—For alterations at Nos. 31 and 32, Poland-street. Mr. Robert Henry Kerr, architect, Berwick House, 139, Oxford-street, W. :—

Manley & Son	£630	Lea Bros.*.....	£530
Turner, McKay, & Ashpole..	560	* Accepted.	

LONDON.—For the erection of house and shop in Mare-street, Hackney, for Mr. J. Hart. Mr. W. Hugh Fisher, architect :—

W. Shurmur.....	£2,152	J. Elkington.....	£1,700
S. Goodall	2,146	J. Burton & Son	1,695
Godfrey & Son	2,124		

LONDON.—For the erection of houses and shops, High-street, Stoke Newington. Messrs. Saville & Martin, architects :—

E. Lawrence & Son	£5,695	Ward & Lamble	£4,893
Kirk & Randall	5,456	Gould & Brand.....	4,796
J. Grover & Son	5,268	S. Goodall	4,529
W. Shurmur.....	5,193		

LONDON.—For the erection of the "Flying Horse" Public-house, and property adjoining, Tottenham Court road. Messrs. Saville & Martin, architects :—

S. Goodall	£13,653	J. Allen & Son	£12,775
G. H. & A. Bywaters	13,495	W. Shurmur	12,330
T. L. Green.....	13,349	Kirk & Randall	12,120
Ashby Bros.	13,075		

LONDON.—For the erection of a warehouse, St. George's-in-the-East, for Messrs. Gooch & Cousens. Mr. Wimble, architect :—

Rider & Son	£10,398	Scrivener & Co.	£9,866
Colls & Son.....	9,959	Ashby & Horner.....	9,758
Holland & Hannen	9,898	Hall, Beddall & Co.	9,750

LONDON.—For erecting new villa residence, Willoughby Lane, Tottenham, for Mr. T. Parr. Mr. T. E. Perkin, architect, 5, Union-court, Old Broad-street, E.C. :—

Finn	£545	Green & Smith*	£290
Porter	347		
	*Accepted subject to slight alterations.		

LONDON.—For the erection of two hospital fever huts at the Eastern Hospital, The Grove, Homerton, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, Architects, 15, Leadenhall-street, E.C.

Johnson, W. & Co., Ltd...	£1,680	Leslie & Coy., Kensington-	
Shurmur, W.	1,386	square, W.*	£1,040
	*Accepted.		

LONDON.—For re-fitting water-closet rooms, &c., at the Western Fever Hospital, Seagrave-road, Fulham, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, Architects, 15, Leadenhall-street, E.C. :—

B. Finch & Co.....	£278 0 0	London & Birmingham	
Banner Sanitation Co.	272 16 0	Manufacturing Co..	£224 4 8
Leslie & Co.	258 0 0	Burn Bros.	192 10 0
W. Keefe	255 0 0	J. Knight	180 17 0
Wenham & Waters ..	242 8 0	Burn & Baillie	176 10 0
F. G. Minter	235 0 0	M. Brodie, 2, Willow-	
Peattie & Axtell.....	227 10 0	street, Westminster*	155 0 0
	* Accepted.		

LONDON.—For the erection, maintenance, and removal of a temporary laundry, at the Western Fever Hospital, Seagrave-road, Fulham, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, Architects, 15, Leadenhall-street, E.C. :—

Hughes, Mann, & Gotto, Highgate-road, Kentish Town..... £998 0 0

LONDON.—For kerbing, paving, and fully making Brent View-road, in the parish of Hendon, for the Hendon Local Board. Mr. S. S. Grimby, Engineer :—

James Dickson	£1,321 7 9	A. T. Catley.....	£992 5 4
Eli Wilson	1,106 17 7	Constable & Co.	988 3 2
Richd. Ballard.....	1,062 6 1	James Hayward.....	970 15 9
Joseph Meston	1,033 7 7	Henry Lee*	922 11 6
H. Drury	1,030 18 10	* Accepted.	

LONDON.—For the erection of two houses and shops, at Plashetgrove, East Ham, E., for Mr. H. Ward, Ware, Herts. Mr. Fred. A. Ashton, architect, 3, Crooked-lane, E.C. :—

J. & H. Cocks	£2 690	W. Watson	£2,226
W. Shurmur.....	2,439	F. Voller*.....	1,895
Hearle & Farrow.....	2,366	* Accepted.	

MANCHESTER.—Accepted for the erection and completion of new kitchen, dining room, bedrooms, and workshops in connection with the Boys' Refuge, Strangeways, Manchester. Messrs. Maxwell & Tuke, architects, 29, Princess-street, Manchester :—

James Byrom, Bury..... £5,667 0 0

MOSELEY.—For the erection of a villa residence in Moor Green-lane, Moseley, for Mr. J. L. Tustin. Mr. T. W. F. Newton, architect and surveyor, 121, Colmore-row, Birmingham :—

Parker.....	£2,145	Davis (accepted).....	£1,770
Huins & Son.....	1,85?	Hughes	1,718
Rowbotham	1,793	Johnson (withdrawn)	1,690

MOULTON (Northampton).—For the restoration of the church tower. Mr. Edmund Law, architect, Abingdon Chambers, Northampton :—

H. Martin	£480 0	J. S. Kimberley	£374 0
Green Bros.	436 0	J. T. Wingrove.....	374 0
J. Sharpe & Son	375 10		

OTLEY (Yorkshire).—For the erection of new stores for the Leeds Industrial Co-operative Society:—

Plumbers.—James Suttle & Son, Courthouse-street, Otley	£218 9 0
Slater.—Hartley Thornton, Otley	41 10 0
Ironwork.—C. J. Dawson, Leeds	249 13 6
Plasterer.—John D. Dakin, Leeds	86 0 0

OXFORD.—For cemetery chapels, caretakers' house, &c., for the Oxford City Council. Mr. W. H. White, M. Inst. C.E., City Engineer. Quantities by Messrs. Hunt & Steward, 45, Parliament-street, S.W.:—

Robinson	£7,019	Sharpe & Son	£6,200
Parnell & Son	7,000	Halliday, Stamford*	6,1[illegible]
Hutchins	6 475	Jarvis	6,100
Wilkins & Son	6,307		

* Accepted.
[City Engineer's estimate, £6,098.]

SHEFFIELD.—For the erection of new fronts to saleshops, Westbar, for Mr. R. S. Whitworth. Mr. W. H. Lancashire, architect, 11, East-parade, Sheffield. Quantities by the architect:—

Hy. Loxley & Sons	£2,412	A. Bradbury	£1,919
John Eshelby	2,357	Ben. Powell & Son (accepted)	1,900
Dutton & Evans	2,157		
H. Randall	2,010	Chas. Farrow	1,881
T. J. Robertson	1,959	J. H. Wheen	1,855
Chambers & Son	1,932	[All of Sheffield.]	

SUTTON COLDFIELD.—For the erection of a villa residence in Clifton-road, Sutton Coldfield, for Miss Shaw. Mr. T. W. F. Newton, architect, 121, Colmore-row, Birmingham:—

Jones & Lloyd	£480	Johnson	£395
Merton Hughes	437	Simons*	325
Trentham	412		

* Accepted.

WAKEFIELD.—Accepted for enlarging St. Mary's Vicarage, Wakefield. Mr. Wm. Watson, architect, Wakefield:—

Excavating, Brick and Stone—F. W. Denholme & Co.	£259 9 6
Slating—C. F. Ryecroft	35 10 9
Plastering—C. Driver	19 16 0
Carpenter and Joiner—C. Squires	96 10 0
Plumbing, Glazing, &c.—S. Atkinson	126 15 0
Painting—Goodall & Lister	16 15 0

WAKEFIELD.—Accepted for alterations and additions to the Wakefield Union Workhouse. Mr. Wm. Watson, architect, Wakefield:—

Excavating, Brick, and Stone—E. A. Elvey	£306 0 0
Slating—J. Illingworth	24 0 0
Plastering—J. C. Tattersall	9 0 6
Carpenter and Joiner—C. Squires	85 15 0
Plumbing, &c.—S. Atkinson	82 0 0
Painting—George Powell	7 14 0

WOOLWICH. — For rebuilding the "Duke of Wellington" Tavern, William-street. Mr. H. H. Church, architect, Woolwich:—

Balaam Bros.	£3,153	Young & Lonsdale	£2,728
Munday & Son	2 900	Chapman	2,595
Chessum & Sons	2,750	Holloway	2,470

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J. W. B. (Too long after date).—W. P. & SONS.—W. S. W.—"Competitor" (we cannot print letters not authenticated by name and address of writer).—G. H. B.

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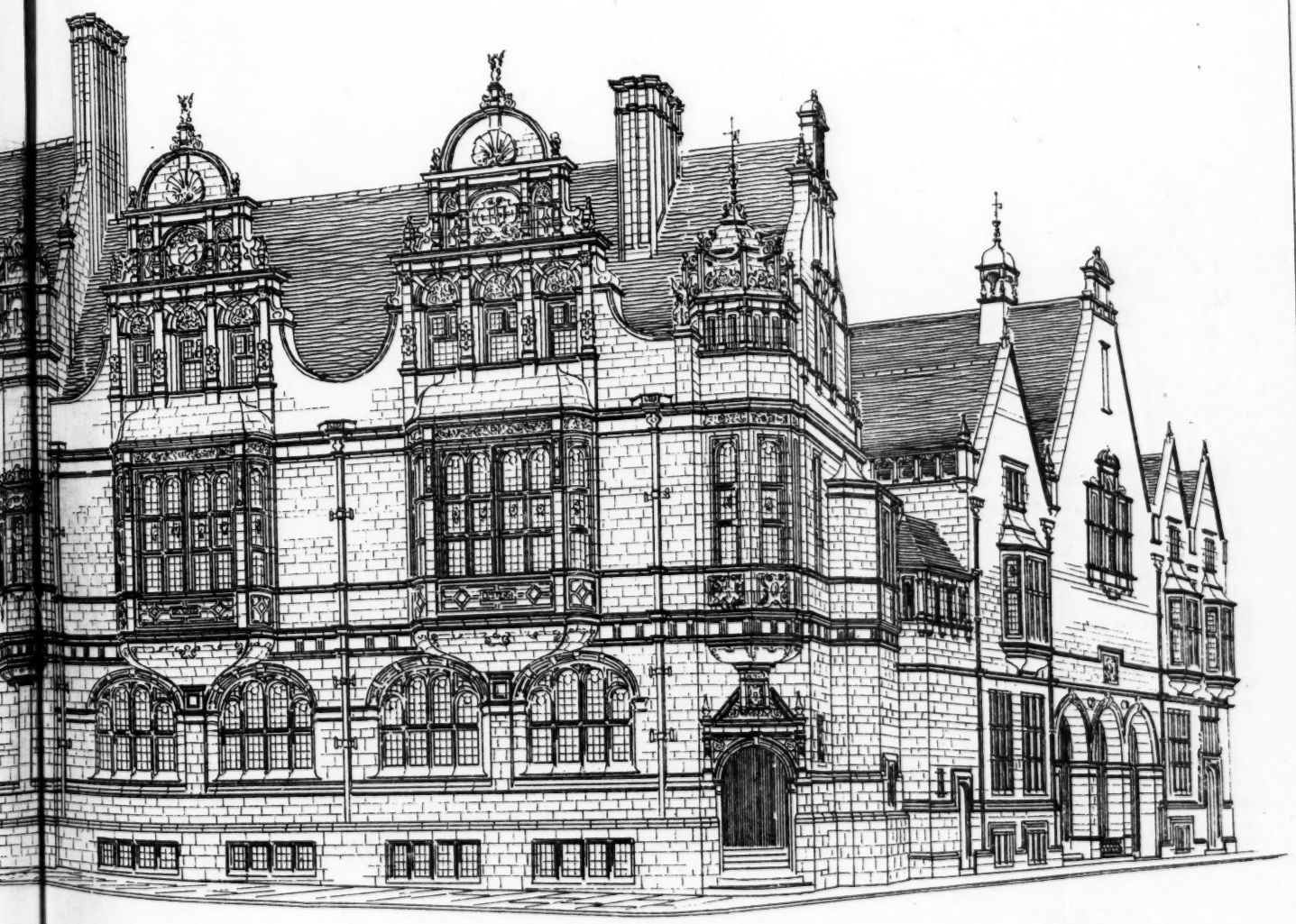

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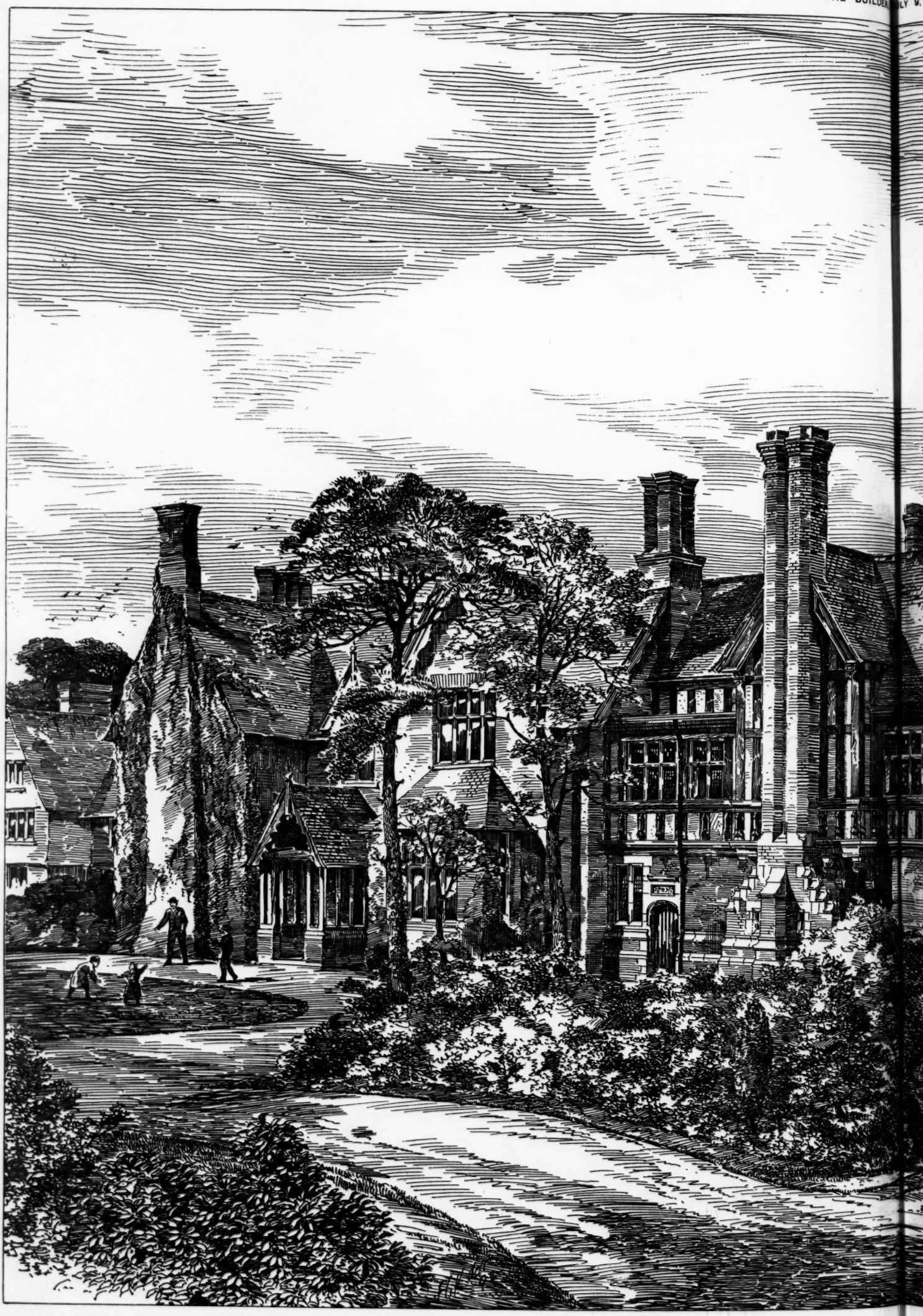
PAL BUILDINGS.—Mr. H. T. Hare, A.R.I.B.A., Architect.



Royal Academy Exhibition, 1892.

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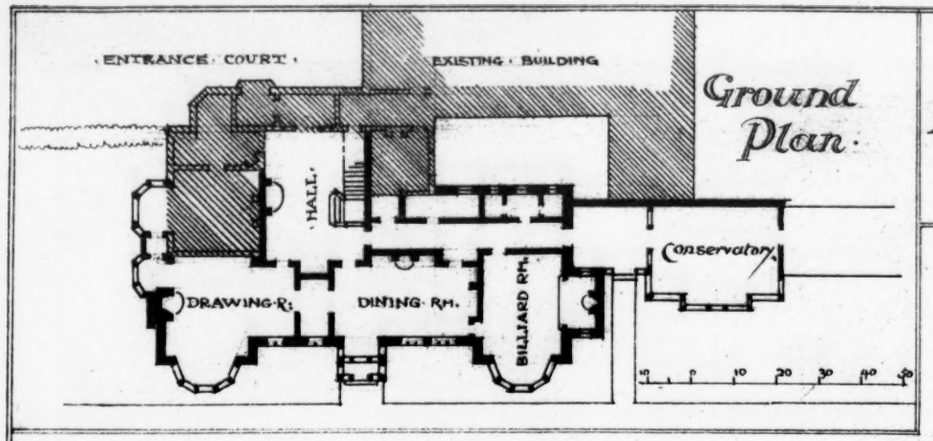

Additions to KIRKLEVINGTON GRANGE · YORKSHIRE · The Garden Front from S.E.

E. J. MAY · ARCHT.

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Royal Academy Exhibition, 1892.

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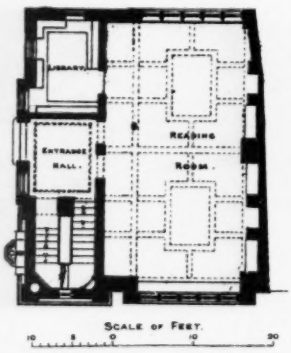
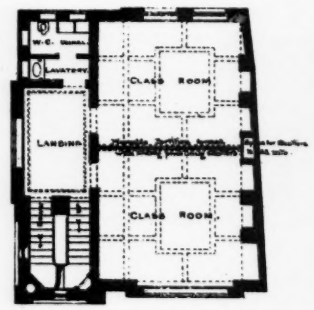
Royal Academy Exhibition, 1892.

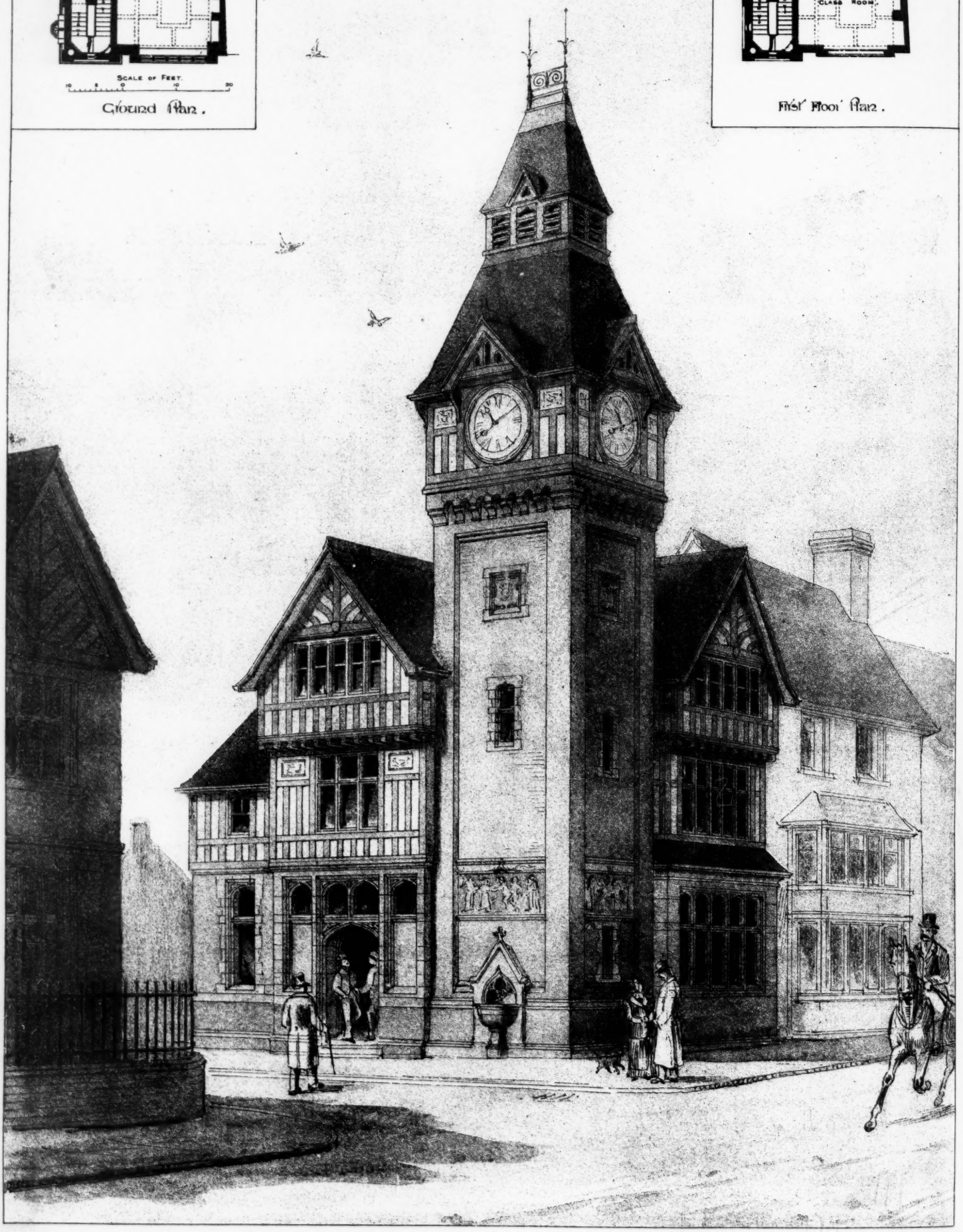
"FIRSDENE," LICKEY, BROMSGROVE.—MESSRS. BATEMAN & BATEMAN, ARCHITECTS.



Ground Plan.



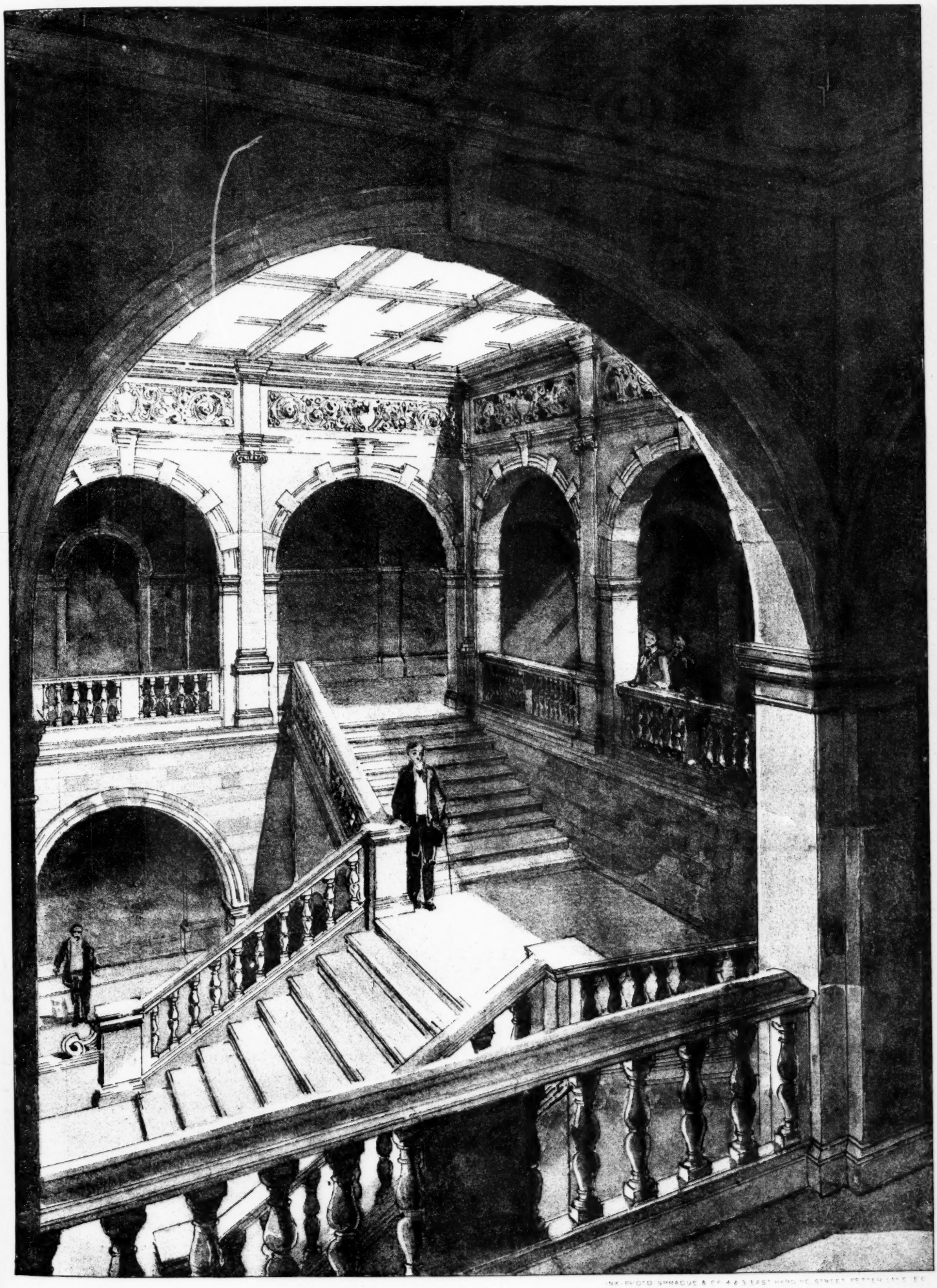
First Floor Plan.



INK PHOTO SPRAGUE & Co 4 & 5 EAST HARDING STREET FETTER LANE E.C.

SELECTED DESIGN FOR BARRETT BROWNING MEMORIAL BUILDING, LEDBURY.

Mr. Brightwen Binyon, A.R.I.B.A., Architect.



TOWN HALL, BATTERSEA.—VIEW OF PRINCIPAL STAIRCASE.—Mr E. W. Mountford, F.R.I.B.A., Architect